An Investigation OF CERVICAL GLAND TUBERCULOSIS.

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THIS investigation of cervical gland tuberculosis was undertaken as a result of the isolation of atypical strains of human and bovine tubercle bacilli from cases of lupus which had developed in the skin of the neck after excision or ulceration of tuberculous cervical glands. The object of the investigation was to ascertain whether or not tubercle bacilli raised from tuberculous cervical glands ever diverged from the standard in the same way as these lupus tubercle bacilli.

Up to the present time strains of tubercle bacilli with the aberrant characteristics pertaining to the majority of lupus tubercle bacilli have been demonstrated very infrequently in internal varieties of human tuberculosis or in animal tuberculosis. The clearest example of the occurrence of atypical tubercle bacilli of lupoid order in lesions of human tuberculosis other than those of the skin is recorded by Weber and Steffenhagen.[1] These observers isolated atypical bovine tubercle bacilli on three separate occasions from the tuberculous metacarpal bone of a child.* This result is of special interest, because two years previous to Weber and Steffenhagen's investigations Oehlecker[2] had isolated from the same lesion in this child a fully virulent bovine culture. This case and others which have yielded atypical tubercle bacilli will be referred to more particularly in a forthcoming report on lupus. Among animal species atypical tubercle bacilli apparently identical with some bovine lupus strains have been found occasionally in the tuberculous horse[3] and pig.[4]

As wider knowledge of the occurrence and distribution of variant strains is desirable, and is, indeed, essential to my study of the etiology of lupus, I am carrying out on an extended scale investigations of the biological characters of tubercle bacilli from as many varieties of human and animal tuberculosis as possible. Incidentally, these investigations are giving much needed information upon the relative prevalence of the different standard types of tubercle bacilli in tuberculous animals and man.

Examination of a series of cervical gland cases was considered of first importance because cervical gland tuberculosis is the only form of tuberculosis of which lupus has been observed to be a direct sequela. About 12 per cent. of the cases of lupus which I have examined have followed tuberculosis of the cervical glands, and in all but one of these cases the lupoid lesions have yielded atypical tubercle bacilli. There was presumption, therefore, that if atypical tubercle bacilli of lupus class are occurring at all commonly in regions of the human body other than the skin, the quest for these aberrant strains should be more successful in cervical glands than in other internal tissues of the human body.

Inquiry in this sense began in August, 1912. It is being continued, but I am reporting now on the cases collected up to July, 1914, because for several months after the outbreak of war there was intermission in the supply of material.

* On a fourth occasion they obtained from the lesion a culture of typical bovine tubercle bacilli.

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I wish here to express my grateful thanks to various surgeons and pathologists who have made this research possible by supplying me with material and with notes of the cases. In Table I. the source of each material is recorded, and for the purpose of future reference I have given also the initials and age of the patient and the date of receipt of the glands.

The material examined has been derived from widely separated centres of population, and, while probably not in consecutive series from any of the sources, has been forwarded without any kind of selection.

Description of Material.

The original material was obtained by surgical operation from 110 persons, including children, adolescents, and adults. The material was mainly lymphatic glands. In a few instances it was pus from an abscess or curettings from a tuberculous sinus in the neck.

The sets of lymphatic glands were of two sorts. The great majority of the sets contained definitely tuberculous glands, which were caseous or caseo-calcareous wholly or in part. The rest consisted of glands which were not apparently tuberculous; on section they were found to be composed of homogeneous hyperplasic glandular tissue, or they showed yellow suppurative foci. In two of the cases the glands were from the axilla, and in one from the femoral region. In all other instances they were from the neck.

Methods of Bacteriological Investigation.

The glandular material was reduced to a pulp in a mortar, emulsified with sterile physiological salt solution, and filtered through muslin. The emulsion was examined microscopically, and then used to inoculate intraperitoneally one or two guinea-pigs. An attempt was usually made to secure a culture direct from the original material. A guinea-pig was killed after the lapse of from three to five weeks, and cultures were made from it if tuberculosis had developed. Sometimes when the direct culture was assured a guinea-pig strain was dispensed with.

In a good number of instances the guinea-pig or guinea-pigs inoculated with original material did not develop tuberculosis, although that material was macroscopically tuberculous, and in many instances showed tubercle bacilli microscopically. Cultures were nevertheless made from the normal organs of many of these guinea-pigs, the glands adjacent to the omentum and the spleen being chosen for the cultural experiments. It is important when searching for atypical tubercle bacilli to make cultures from guinea-pigs which have been inoculated with material presumed to be tuberculous, though their tissues may appear at the post-mortem examination to be perfectly normal. I have on several occasions cultivated atypical tubercle bacilli from the tissues of guinea-pigs which presented no macroscopical lesions of tuberculosis four to six weeks after inoculation with lupus material.

All the cultures were raised upon egg medium without glycerine and subcultivated on pure bovine serum. Glycerine egg was frequently used for primary cultures, but solely for the purpose of getting early information as to the type of the tubercle bacillus. All tests, cultural and pathogenetic, were made with cultures which had been grown throughout on media free from glycerine.

The differential media used have been glycerinated potato, glycerine serum, glycerine agar, and glycerine broth. The most reliable of these is, in my experience, glycerinated potato.

The comparative virulence of each culture has been tested on the rabbit by subcutaneous inoculation between the shoulders.

The subcutaneous method was chosen instead of the intravenous mainly because subcutaneous inoculation will bring out slight grades of attenuation in bovine tubercle bacilli which are not revealed by intravenous inoculation. The subcutaneous method also differentiates more clearly than the intravenous standard bovine tubercle bacilli from standard human tubercle bacilli which have displayed relatively high pathogenicity for the rabbit. Strains of human tubercle bacilli occasionally produce a good deal of tuberculosis in rabbits, and this tuberculosis, attributable either to higher virulence than is usual for human viruses or to specially susceptible rabbits, is apt to be more widespread and severe when the culture is inoculated intravenously than when it is inoculated subcutaneously.

The rabbits were inoculated with weighed quantities of moist growth from young serum cultures scraped from the surface of the serum with a platinum spatula and weighed directly without previous drying. The particular subcultures used were never more than 20 days old, usually 7 to 10, and except where repeat tests were necessary were in quite early generation, fourth to sixth.

The cultures which were bovine in cultural characters were tested on two or more rabbits, the dose in each case being 10 milligrammes; in a few instances the dose was a little more or a little less. The eugonic cultures were tested sometimes on two rabbits, sometimes on one only, and the dose given was often larger than 10 milligrammes. Rabbits were kept under observation until they died or until the experiment had lasted three or four months, when they were killed.

BACTERIOLOGICAL RESULTS.

The 110 cases with which I am dealing are divisible into three groups, comprising respectively 10, 29, and 71 individuals, as follows:—

Group 1.—Ten sets of lymphatic glands which were not macroscopically tuberculous did not produce tuberculosis in guinea-pigs. The glands in two of these sets contained small suppurative foci, and in the others were in a condition of hyperplasia. Microscopical examination of five and cultural experiments with four of the emulsions of the glands, including the two with purulent foci, yielded negative results. The patients from whom these glands were excised varied in age; five were under and five were over 12 years of age.

Group 2.—Lymphatic glands from 29 other patients also failed to produce tuberculosis in guinea-pigs. These glands were, however, definitely tuberculous to the naked eye and contained caseo-calcareous or softened caseous material or caseopus. In 15 cases tubercle bacilli were found in smear preparations of the emulsions used for inoculating the guinea-pigs; in 7 of these 15 emulsions tubercle bacilli were numerous or moderately numerous and were short and well-stained. Microscopical examination of 11 emulsions was negative, and of 3 was not made. Two of the cases were twice investigated, the interval between the examinations being four and a half and two and a half months, and on each occasion the result was negative. Fifty guinea-pigs in all were inoculated with the material from these 29 cases.

In order to ascertain whether the glands from these patients might not perhaps have been harbouring living tubercle bacilli, possessing so low an order of virulence as to be incapable of producing tuberculosis in the guinea-pig, many cultural experiments were made. Direct cultures were sown in 26 of the cases, and in 21 of these the culture tubes remained sterile, while in the remaining five they grew contaminating organisms. Cultures were also sown from the omental glands or from the spleens of 15 guinea-pigs, representing 13 of the cases; these experiments were likewise negative. The evidence suffices to show that there were in the material tested no living tubercle bacilli either of standard or of attenuated virulence.

I fully recognise that these negative results cannot be regarded as demonstrating necessarily the cure of the disease in the patient, but only that the tuberculous process was arrested in the particular glandular material used for experiment. Nevertheless they show conclusively that in glandular tuberculosis there is marked tendency to spontaneous cure of the disease. In this series of the sets of glands showing definite tuberculous lesions, 29 per cent. gave negative results in culture and in animal experiment. This tendency to spontaneous arrest of glandular tuberculosis should be remembered when estimating therapeutic effect of specific remedies in these conditions.

It is impossible to say what may have been the type of infection in these cases, but if, as seems probable (see below), the presence of numerous short tubercle bacilli is presumptive of bovine infection, 7 at least of the 29 cases were due to bovine tubercle bacilli.

There are many other instances recorded in which macroscopically tuberculous material has failed to produce tuberculosis in guinea-pigs.[5,6] Several of the observers who have investigated cervical gland tuberculosis report such cases. Lewis[7] obtained negative results in 2 out of 17 cases of primary cervical gland tuberculosis. In both cases the microscopical examination showed the pathological picture of tuberculosis. Oehlecker[2] investigated cervical glands from 28 cases in which the clinical diagnosis of tuberculosis was indicated as probable, and in only 14 cases did the guinea-pigs inoculated develop tuberculosis. Oehlecker makes no statement with respect to the pathological condition of the glands from the 14 negative cases. Burckhardt[8] investigated 10 cases of cervical gland tuberculosis and found the material from one to be not infective for guinea-pigs. One of the 9 cases of cervical gland tuberculosis investigated by Cobbett for the Royal Commission on Tuberculosis, which yielded a bovine culture when first examined, gave negative results on two subsequent examinations.[5] In striking contrast to the above results are those of Mitchell.[9] This observer investigated 72 consecutive cases of cervical gland tuberculosis in children and did not obtain a single negative result.

Group 3.—In 71 of my 110 cases the original material produced tuberculosis in guinea-pigs, and cultures were obtained. Altogether 98 strains have been isolated, 33 directly and 65 through the guinea-pig.

The cultures from these 71 cases fall into two groups.

Eugonic Strains.

Thirty-seven of the cases yielded cultures which exhibited the cultural characteristics and rabbit pathogenicity of standard human tubercle bacilli. Each one of these strains produced luxuriant pigmented growths on serum and thick, creamy, wrinkled layers on glycerinated potato. Characteristic growths were also produced by each of the strains on one or other of the other glycerine media. Among the strains in this group there has been very little variation in degree of luxuriance. The virulence of one strain from each of the 37 cases has been tested on the rabbit by subcutaneous inoculation. Altogether 60 rabbits have been thus inoculated. In Table II. the details of these experiments are set out. The few rabbits which died prematurely are not included.

The pathogenic effects of these eugonic cultures have been very diverse, but the range of variation has not been wider than is usual in any large series of rabbits inoculated with standard human viruses. None of the rabbits died from tuberculosis, the period of observation being from three to four months. While in the great majority of the rabbits the tuberculosis produced was slight, in several it was of moderate and even of considerable severity.

Severe tuberculosis produced by human tubercle bacilli can as a rule be readily distinguished from the chronic forms of tuberculosis which sometimes follow subcutaneous inoculation of standard doses of bovine tubercle bacilli. Disseminated disease set up by human tubercle bacilli is generally limited to the lungs. There may be small tubercles in the kidneys, but these are usually few in number and retrogressive. The glands adjacent to the local lesion may show tuberculosis, but they are seldom extensively caseous. Distal lymphatic glands are almost invariably normal. Besides the difference in distribution of lesions there is difference also in the macroscopical appearance of the lesions, a difference which is at once apparent to those who have had some experience in the examination of experimentally tuberculous rabbits. Exceptions to this rule sometimes occur, and then it is necessary to isolate and test a culture from the suspicious lesion, for the original culture may have contained an admixture of bovine tubercle bacilli. In this series a culture was recovered from one of the most severely affected rabbits (No. 320). The recovered culture was eugonic and exhibited very low virulence for another rabbit, thus proving that the exceptionally severe disease in Rabbit 320 was due wholly to human tubercle bacilli.

It will be noted in Table II. that several cultures produced in the rabbit local tuberculosis only. Such limited pathogenic effect does not necessarily indicate an abnormally low grade of virulence of the particular cultures, for human viruses of proved standard virulence often produce in rabbits when inoculated subcutaneously no more than a local lesion. On account of this capacity of individual rabbits entirely to resist infection with standard human viruses the rabbit species is not a suitable one for estimating whether or not a culture of human type culturally is up to standard in virulence. In order to demonstrate attenuation in a human virus guinea-pigs (or monkeys) must be employed.

It is not, however, necessary systematically to test cultures of tuberculous viruses on the guinea-pig, because it is possible to judge from the results produced by the inoculation of original material whether the culture from that material is likely to show attenuation.

With one exception (exclusive of one case in which the guinea-pig died prematurely) the original material of the 37 human viruses produced typical tuberculosis in the guinea-pigs. The exception was Case 57, which produced in six weeks in one guinea-pig no tuberculosis, and in another caused tuberculosis limited to one inguinal gland. The culture raised from the latter guinea-pig was tested therefore in standard dose (0·1 mg.) on guinea-pigs as well as on rabbits. It produced in two guinea-pigs subcutaneously inoculated typical fatal general tuberculosis in 63 and 89 days. The slight effect in the original guinea-pig must be referred therefore to paucity of living tubercle bacilli in the emulsion and not to attenuation of virulence.

Dysgonic Strains.

From the remaining 34 of the 71 cases yielding cultures, the cultures isolated displayed less cultural luxuriance and higher virulence for the rabbit than those in the group just dealt with. The strains of these viruses have exhibited a wide range of variation in degree of luxuriance. In respect to 32 of the 34 viruses the range of cultural luxuriance corresponded exactly with that ascertained by the investigators of the Tuberculosis Commission for tubercle bacilli of bovine tuberculosis.

The two remaining strains have grown rather more luxuriantly than any strain of bovine origin which I have hitherto met with. The increased luxuriance was observed in primary culture on glycerine egg and in subculture on glycerine agar. On glycerine egg the colonies were as numerous as, and larger than on egg alone, but they were not pigmented (bovine tubercle bacilli as a rule grow very sparsely on glycerine egg in primary culture); on glycerine agar the growth ultimately formed was in places dense, wrinkled, and slightly pigmented, but the layer was not uniform and the rate of growth was slower than with human tubercle bacilli.

Similar relatively eugonic virulent strains have been isolated by Eastwood and F. Griffith from tuberculous children[6] and from the tuberculous lesions of swine.[4] The cultural characters of these two cervical gland strains were found to be stable after animal passage. Each strain was passed through the bodies of three rabbits in succession, and cultures from distal lesions of the last rabbit as well as from those of the two previous ones were identical in cultural character with the original culture. There was therefore no evidence of admixture of human tubercle bacilli.

The cultures from all these 34 cases proved highly virulent for rabbits and produced in them fatal general progressive tuberculosis identical in every respect with that produced after similar interval of time by tubercle bacilli of bovine tuberculosis.

None of the 71 viruses, whether of human or of bovine type culturally, has shown any evidence of attenuation. The culture from each virus was either a standard human culture or a standard bovine culture.

[The cultures from three of the cervical gland cases—viz., Nos. 53, 88, and 95—were isolated and tested (except the virulence test of Case 95 which was made by me) by Drs. Eastwood and F. Griffith. Two further cases, macroscopically tuberculous, investigated by them did not produce

TABLE I.—*List of Cases which yielded Cultures, and Summary of Results.*

No. of case.	Designation and date of virus.	Source of material.	Sex and age in years.	Macroscopical. Condition of glands.	Microscopical. Smear preparations of emulsions.	Derivation of cultures, direct or through G P.	Results in guinea-pigs inoculated with original material.	Classification of cultures.
1	W, 28/8/12	Mr. Kelly, Liverpool.	M., 23	Caseous, softening.	1 T B.	Direct – Guinea-pig +	2 G Ps. K 24 and 30 days. Slight G T.	Human.
2	M R, 11/9/12	,,	F., 23	Caseous, waxy.	Scattered T B, mostly short.	Direct + Guinea-pig +	2 G Ps, after 33 and 67 days. Severe G T.	Bovine.
3	N B, 11/9/12	Mr. Trotter, London.	F., 21	,, ,,	No T B.	Direct +	2 G Ps, K 55 days. Slight G T.	Human.
4	A S, 26/9/12	Mr. R. Johnson, London.	F., 39	Caseous, softened.	No T B.	,,	2 G Ps, K 47 days. Slight G T.	Human.
5	(S D, 2079), 8/10/12	Dr. Turnbull, London Hosp.	F., 30	Caseous, waxy.	No T B.	Direct – Guinea-pig +	1 G P, K 31 days. Slight G T.	Bovine.
10	F M, 27/11/12	Mr. Kelly.	M., 27	Firm, caseous areas.	No T B.	Direct +	1 G P, D 27 days. Severe G T.	Human.
11	(S D, 2484), 6/12/12	Dr. Turnbull.	F., 16	Caseous, in places softened.	1 T B.	Direct – Guinea-pig +	2 G Ps, K 26 and 56 days. Slight G T.	Bovine.
13	(S D, 2518), 11/12/12	,,	F., 12	Firm, caseous, and gritty.	No T B.	,, ,,	2 G Ps. K 30 and 51 days. Slight G T.	Human.
14	H E, 14/12/12	Mr. Kelly.	F., 19	Caseo-purulent.	? 1 T B.	,, ,,	2 G Ps, K 30 and 54 days. Slight G T.	Bovine.
19	E J, 17/1/13	Victoria Hosp., Chelsea.	M., 3½	Caseo-calcareous.	Scattered short T B.	Direct + Guinea-pig +	1 G P, K 32 days, severe local T. Slight G T.	Bovine.
20	W B, 20/1/13	,,	M., 5	1 calcareous tubercle.	—	Guinea-pig +	1 G P, K 40 days. Moderate G T.	Bovine.
23	B R, 3/2/13	,,	M., 2	Caseo-calcareous.	Numerous T B, mostly short.	,,	1 G P, D 29 days. Acute G T.	Bovine.
24	A B, 5/2/13	Mr Kelly.	F., 24	Firm, caseous.	—	Direct + Guinea-pig +	1 G P, K 27 days. Slight G T.	Human.
25	J W, 11/2/13	Mr. Johnson.	M., 6	,, ,,	No T B.	Guinea-pig +	1 G P, K 32 days. Slight G T.	Human.
28	—, 20/2/13	Dr. H. Drummond, Newcastle.	M., 6	Caseous, softened.	2 T B.	Direct + Guinea-pig +	1 G P, D 25 days. Severe local T. Slight G T.	Bovine.
31	—, 27/2/13	,,	F., 30	Firm, caseous.	A few T B.	Direct – Guinea-pig +	1 G P, K 32 days. Slight G T.	Human.
33	—, 6/3/13	Charing Cross Hosp.	M., 16	Caseo-necrotic patches.	No T B.	Guinea-pig +	1 G P, K 58 days. Moderate G T.	Human.
34	—, 6/3/13	Dr. Drummond.	M., 26	Firm, caseous.	No T B.	Direct + Guinea-pig +	1 G P, K 26 days. Moderate G T.	Human.
35	K H, 10/3/13	Victoria Hosp., Chelsea.	F., 8	Caseous and gritty.	Scattered T B.	,, ,,	1 G P, K 25 days. Local T only.	Human.
36	—, 21/3/13	Charing Cross Hosp.	F., 18	Slightly caseous.	1 T B.	,, ,,	1 G P, D 43 days. Moderate G T.	Human.
37	(S D, 667) 27/3/13	Dr. Turnbull.	F., 18	Large, extensively caseous and softening.	No T B.	,, ,,	1 G P, K 41 days. Severe G T.	Bovine.
38	J L, 29/3/13	Victoria Hosp., Chelsea.	F., 5	Caseo-calcareous.	Moderate number T B mainly short.	,, ,,	1 G P, K 60 days. Moderate G T.	Bovine.
39	—, 12/4/13	Charing Cross Hosp.	F., 19	Caseous, softening.	No T B.	Guinea-pig +	2 G Ps, 41 and 53 days. Moderate G T.	Human.
40	J S, 23/4/13	Victoria Hosp., Chelsea.	F., 4	,, ,,	Moderate number short T B.	Direct – Guinea-pig +	1 G P, K 47 days. Slight G T, but nearest glands very caseous.	Bovine.
43	M H, 24/6/13	Charing Cross Hosp.	F., 31	Caseous, firm.	No T B.	,, ,,	2 G Ps, K 60 days. Chronic G T.	Human.
44	S McM, 3/7/13	Victoria Hosp., Chelsea.	M., 3	Small, firm, caseous patches.	Numerous T B, mainly short.	Direct + Guinea-pig +	2 G Ps, 23 and 39 days. Moderate G T.	Bovine.
46	M M, 14/10/13	Mr. Johnson.	F., 17	Caseous, softened.	No T B.	Direct – Guinea-pig +	2 G Ps, 30 and 42 days. Moderate G T.	Human.
47	M B, 16/12/13	Prof. Teacher, Glasgow.	F., 14	One gland showed a patch of caseation.	No T B.	Direct contaminated. Guinea-pig +	2 G Ps, 25 and 39 days. Moderate G T.	Bovine.
48	J McD, 28/12/13	,,	M., 18	Caseous, breaking down.	No T B.	Direct contaminated. Guinea-pig +	2 G Ps, 21 and 43 days. Moderate G T.	Bovine.
49	J T, 7/1/14	Dr. Shennan, Edinburgh.	F., 22	,, ,,	No T B.	Guinea-pig +	2 G Ps, K 24 and 29 days. Moderate G T.	Bovine.
52	R W, 28/1/14	Carshalton.	F., 11	Caseous and softened.	No T B.	Direct – Guinea-pig +	2 G Ps, K 33 and 37 days. Slight G T.	Human.
53	A P, 29/10/13	Birmingham.	F., 1½	Caseous, softened.	—	Direct + Guinea-pig +	2 G Ps, K 45 days. G T.	Bovine.
55	—, 30/1/14	Dr. Sutcliffe, Margate.	F., 14	Material resembled granulation tissue.	1 vacuolated T B.	Guinea-pig +	1 G P, K 43 days. Slight G T.	Human.
57	A B, 3/2/14	London.	M., adult.	Firm caseous.	—	,,	2 G Ps, K 43 days. One was healthy. The other had a caseo-purulent inguinal gland only.	Human.

58	J W, 5/2/14	Dr. Mitchell, Edinburgh.	M., 2½	Caseous and softened.	Moderate number short T B.	Direct + Guinea-pig +	2 G Ps, K 28 and 42 days. Severe G T.	Bovine.
59	J F, 5/2/14	,,	F., 8	Caseous and softened nodules.	No T B.	Direct – Guinea-pig +	2 G Ps, K 33 and 43 days. Former showed slight T; latter no T.	Bovine.
61	H B, 5/2/14	Dr. Drummond.	F., 17	Hyperplasic.	No T B.	Guinea-pig +	2 G Ps, 33 and 62 days. Slight G T.	Human.
62	–, 6/2/14	Professor Teacher.	F., 9	Caseous, softening.	Moderate number T B, slender, majority short.	Direct + Guinea-pig +	2 G Ps, K 29 and 41 days. Moderate G T.	Human.
63	M H, 9/2/14	Dr. Mitchell.	F., 6	Caseous, breaking down.	Numerous T B, mostly short.	,, ,,	2 G Ps, D 20 and 21 days. Acute G T.	Bovine.
64	–, 12/2/14	Dr. Sutcliffe.	F., 7	Firm, caseous.	Scattered short T B.	Direct – Guinea-pig +	2 G Ps, 35 and 44 days. Severe G T.	Bovine.
65	A N, 14/2/14	Dr. Marsh, Macclesfield.	F., 17	Caseous, beginning to soften.	No T B.	,, ,,	1 G P, K 34 days. Slight G T.	Human.
66	S, 17/2/14	,,	F., 8	Caseo-purulent.	Moderate number short T B.	,, ,,	2 G Ps, 34 and 36 days. Severe G T.	Bovine.
68	–, 25/2/14	Dr. Sutcliffe.	M., 8	Caseo-purulent patches.	No T B.	Direct + Guinea-pig +	2 G Ps, 27 and 44 days. Moderate G T.	Human.
70	A G, 12/3/14	Dr. Mitchell.	F., 9	Firm and caseous.	No T B.	,, ,,	2 G Ps, D 24 and 31 days. G T not severe.	Human.
71	J H, 12/3/14	,,	M., 8	Slightly caseous.	Scattered short T B.	Guinea-pig +	2 G Ps, D 24 and 32 days. Severe G T.	Bovine.
72	G L, 12/3/14	,,	M., 1	Caseous, softening.	Scattered slender rather beaded T B.	,,	2 G Ps, 21 and 28 days. G T moderate.	Human.
73	T P, 13/3/14	Mr. Pybus, Newcastle.	M., 13	Purulent.	No T B.	,,	2 G Ps, D 25 and 26 days. Moderately severe G T.	Human.
74	–, 18/3/14	Dr. Robertson, Glasgow.	F., ½	Granulation tissue scrapings.	No T B.	,,	2 G Ps, D 23 and 39 days. Severe G T.	Bovine.
75	M, 21/3/14	London.	F., 13	Caseous, softening.	Scattered slender T B, mostly short slight vacuolation.	Direct + Guinea-pig +	2 G Ps, K 33 and 37 days. Moderate G T.	Human.
76	C M, 21/3/14	Cambridge.	M., 8	Caseous, softened.	No T B.	,, ,,	2 G Ps, D 24 and 27 days. Slight and moderate G T.	Human.
77	G F, 21/3/14	,,	M., 41	Caseous, softening.	Moderate number short T B.	,, ,,	1 G P, D 32 days. Moderate G T.	Bovine.
79	M D, 28/3/14	London.	F., 14	Purulent.	No T B.	Guinea-pig +	1 G P, D 30 days. Moderate G T.	Human.
81	V H, 15/4/14	Cambridge.	F., 9	Caseo-purulent.	1 T B.	Direct + Guinea-pig +	2 G Ps, 29 and 40 days. Severe G T.	Bovine.
82	J E, 17/4/14	Mr. Pybus.	M., 2½	Caseous areas.	No T B.	Guinea-pig +	2 G Ps, K 34 and 60 days. G T moderately severe.	Bovine.
83	A M, 17/4/14	,,	M., 9	Caseous, softening.	No T B.	Direct + Guinea-pig +	2 G Ps, K 35 and 60 days. Slight G T.	Human.
84	–, 22/4/14	Dr. Robertson.	F., 6	Caseous, softened.	Scattered short T B.	Guinea-pig +	2 G Ps, K 34 and 45 days. Severe G T.	Bovine.
85	–, 22/4/14	,,	M., 11	Scrapings from cervical glands.	—	,,	1 G P, K 31 days. Moderate G T.	Human.
86	A B, 22/4/14	Cambridge.	M., 13	Caseous.	No T B.	Direct + Guinea-pig +	2 G Ps, D 31 and 40 days. Severe G T.	Bovine.
87	McG, 24/4/14	Dr. Robertson.	F., 4	Caseous, softening.	Numerous short T B.	Guinea-pig +	2 G Ps, K 35 and 68 days. Slight and moderate G T.	Bovine.
88	–, 5/12/13	Dr. Sutcliffe.	F., 25	Caseous.	Moderate number beaded T B.	Direct +	2 G Ps, K 24 days. G T.	Human.
89	–, 29/4/14	Dr. Robertson.	F., 11	—	1 T B.	Guinea-pig +	2 G Ps, 33 and 66 days. Severe G T.	Bovine.
90	–, 1/5/14	,,	M., 5	Abscess of axilla.	No T B.	Direct + Guinea-pig +	2 G Ps, K 41 days. Severe G T.	Bovine.
91	A S, 6/5/14	Dr. Mitchell.	M., 6	Caseo-calcareous tubercle.	Scattered short T B.	Guinea-pig +	1 G P, K 63 days. Severe G T.	Bovine.
94	P M, 19/5/14	London.	M., 14	Caseous, softening.	No T B.	,,	2 G Ps, K 31 and 45 days. Severe G T.	Bovine.
95	L P, 10/1/14	Birmingham.	F., 13	—	A few T B.	Direct + Guinea-pig +	1 G P, D 41 days. Slight G T.	Human.
98	L B, 26/5/14	London.	F., 23	Caseous, softened.	No T B.	Guinea-pig +	2 G Ps, K 43 and 48 days. Slight G T.	Human.
100	W, 29/5/14	Mr. Pybus.	F., 25	Small caseous areas.	No T B.	Direct +	2 G Ps, 75 days. Chronic G T.	Human.
101	B C, 5/6/14	,,	F., 8	Firm, caseous.	No T B.	Direct + Guinea-pig +	2 G Ps, K 36 and 61 days. Moderately severe G T.	Human.
102	–, 6/6/14	Dr. Sutcliffe.	M., 11	Caseo-purulent.	3 T B.	,, ,,	2 G Ps, K 35 and 60 days. Slight G T.	Bovine.
106	T B, 15/7/14	Cambridge.	F., 20	Firm, caseous.	2 T B.	,, ,,	3 G Ps, 27 to 51 days. Moderate G T.	Human.
107	I McD, 12/8/14	Mr. Rutherford, Glasgow.	F., 19	,, ,,	No T B.	,, ,,	1 G P, K 84 days. Chronic G T.	Human.

G P = Guinea-pig. T B = Tubercle bacilli. G T = General tuberculosis. T = Tuberculosis. + = Positive result. – = Negative result.

I am indebted to Mr. Waterhouse for the material from the Victoria and Charing Cross Hospitals, and to Dr. Malden for that from Cambridge.

TABLE II.—*Tabular Summary of Experiments on Rabbits with Eugonic Strains. All Inoculated Subcutaneously.*

No. of case.	Derivation of culture.	Dose in milligrammes.	Number of rabbit.	Weights of rabbits in grammes.		Duration of life.	Post-mortem results.				
				Initial.	Final.		Local lesion.	Adjacent glands.	Lungs.	Kidneys.	Other organs or glands.
						Days.					
1	Through G P.	50	320	2970	2850	101	Caseous cyst.	Extensively caseous.	Numerous firm caseating nodules, discrete and confluent. (Eugonic culture isolated.)	Scattered caseating tubercles. (Eugonic culture isolated.)	1 caseous tubercle loosely attached to capsule of spleen.
	Through rabbit 320 (lung).	10	577	2000	2490	90	Caseous and softened.	1 caseous nodule in one.	1 hempseed-sized caseous nodule.	—	—
3	Direct.	30	328	2670	2570	98	Caseous cyst.	Partly caseous.	Scattered miliary tubercles and 6 caseating nodules up to split pea.	1 submiliary caseous tubercle in one.	—
4	,,	37	321	2420	2270	101	Caseous and softened.	—	Numerous grey tubercles and several patches of aggregated tubercles containing caseous foci on the surface; scattered tubercles in depth.	—	—
10	,,	25	407	1740	1750	129	Caseous cyst.	—	Moderate number caseating nodules up to 2·5 mm., mainly on dorsal surfaces, and 2 small marginal caseating patches.	Numerous minute surface pits; a few minute cortical tubercles; yellow focus in one papilla.	—
13	Through G P.	10	452	2190	2500	127	Caseous, very small.	—	—	—	—
24	Direct.	12·5	517	2450	2720	105	Caseous cyst.	Enlarged; not caseous.	Dorsal surfaces covered with superficial grey nodules showing scanty caseation; elsewhere scattered tubercles.	—	—
25	Through G P.	15	566	1900	2190	96	,,	1 caseous nodule.	Margins tuberculous; discrete tubercles elsewhere.	2 submiliary grey-white tubercles.	1 testis and epididymis showed early tuberculosis.
31	,,	20	567	2800	2960	96	,,	—	Scattered caseating nodules and a few small marginal and superficial caseating patches.	1 grey-white tubercle.	—
33	,,	10	1048	1570	1580	95	,,	—	Moderate tuberculosis, superficial nodules and patches chiefly.	A few tubercles in each.	—
		10	1049	1260	1950	95	,,	—	Slight tuberculosis.	—	—
34	Direct	10	568	1340	1840	114	Caseous nodules.	—	A few tubercles and small marginal caseating patches.	—	—
35	,,	10	569	1850	2040	114	Caseous cyst.	—	6 grey tubercles.	—	—
36	,,	10	576	1810	2600	92	,,	—	,,	—	—
39	Through G P.	10	612	1730	2340	97	,,	—	,,	—	—
		10	613	2230	2530	97	,,	—	3 submiliary tubercles.	—	—
43	,,	25	816	1570	1310	118	,,	1 caseous.	Scattered tubercles and superficial caseating patches.	—	—
46	,,	10	878	1640	1710	130	,,	Caseous nodules in 1	About 18 caseating patches up to 1 cm.	1 grey tubercle.	—
	,,	10	879	2050	2100	130	,,	—	Scattered submiliary tubercles and marginal caseating patches.	—	—
52	,,	10	1002	1280	1880	109	Caseous, small.	—	A few tubercles.	3 tubercles.	—
	,,	10	1003	1660	1800	109	Caseous cyst.	—	Mainly composed of solid grey, slightly caseous substance.	6 submiliary tubercles.	—
55	,,	10	968	2030	2180	91	,,	A caseous tubercle in 1.	Moderately numerous caseating tubercles and nodules up to 1 cm. (Eugonic culture isolated.)	6 to 8 grey-white tubercles in each.	1 submiliary tubercle in spleen.
	,,	10	969	1750	2220	91	,,	Caseous.	About a dozen tubercles and small marginal caseating patches.	—	—
57	,,	24	1172	2100	2900	117	,,	—	A few small nodules and marginal caseating patches.	—	—
61	,,	10	1004	1280	900	86*	Caseous.	Caseous foci in 1.	3 tubercles.	—	—
	,,	10	1005	1690	2140	106	Caseous cyst.	—	A few caseating patches and tubercles.	—	—
62	Direct.	10	978	2070	2270	88	,,	—	About a dozen grey nodules up to 3 or 4 mm.	—	—
	,,	10	979	1520	1870	88	,,	—	2 caseous tubercles.	—	—
65	Through G P.	12·5	1117	2020	2200	119	,,	—	Caseating superficial and marginal patches and scattered nodules.	One caseous tubercle.	—
	,,	12·5	1118	1620	2030	119	,,	—	6 grey tubercles.	—	—
68	Direct.	10	1032	1800	2210	97	,,	—	—	—	—
	,,	—	1033	1400	1860	97	,,	—	—	—	—
70	,,	15	1131	1090	1720	114	Caseous, softened.	—	Scattered tubercles and a few marginal caseating patches.	—	—
	,,	—	1132	1270	2100	114	Caseous cyst.	—	A few submiliary grey tubercles.	—	—
72	Through G P.	10	1050	1350	1320	39*	Caseous.	Caseous.	A few tubercles.	A few submiliary tubercles.	
	,,	10	1051	1360	2050	95	Caseous cyst.	Watery cysts.	Scattered tubercles.	—	—
73	,,	10	1072	1660	2330	98	,,	1 caseous tubercle.	—	—	—
	,,	10	1073	1660	2270	98	,,	—	1 tubercle.	—	—
75	Direct.	10	1127	1730	2520	114	,,	—	—	—	—
		10	1128	1200	1700	114	,,	—	6 tubercles.	—	—

				1130	1580	2210	119	Caseous cyst.	—	Margins extensively tuberculous; elsewhere scattered nodules.	—	—
				1131	1590	2220	119	,,	—	As above.	—	—

76	Direct.	12	1119	1580	2210	119	Caseous cyst.	—	Margins extensively tuberculous; elsewhere scattered nodules.	—
	,,	12	1120	1350	1700	119	Caseous, nodular.	—	As above.	—
79	Through G P.	10	1146	1750	2100	116	Caseous cyst.	—	Scattered tubercles.	One tubercle.
	,,	10	1147	1850	2130	116	Caseous.	—	Scattered tubercles and superficial and marginal caseating patches.	,,
83	Direct.	10	1129	1540	2210	114	Caseous cyst.	—	Scattered tubercles up to 2 and 3 mm.	—
85	Through G P.	10	1158	1770	2150	118	Scar.	1 caseo-purulent.	—	—
	,,	10	1159	1250	1980	118	Caseous cyst.	—	—	—
98	,,	10	1272	1860	2050	116	,,	Caseous.	4 grey tubercles and 4 small grey caseating patches.	—
	,,	10	1273	1580	1870	116	,,	,,	Scattered caseating nodules and marginal and superficial caseating areas.	One tubercle.
100	Direct.	10	1196	1430	2320	119	,,	1 caseous.	3 grey tubercles.	—
	,,	10	1197	1310	2120	119	,,	1 contained a calcareous focus.	Small reddish grey caseating patches.	—
101	,,	10	1237	1940	1970	104	,,	—	6 dozen tubercles.	—
	,,	10	1238	1950	1990	104	Caseous, softened.	—	—	—
106	,,	12·5	1296	1970	2160	107	Caseous cyst.	—	Scattered miliary tubercles.	—
	,,	12·5	1297	1370	1730	107	,,	1 slightly caseous.	Scattered tubercles and small grey patches.	—
107	,,	10·0	1312	1600	2000	107	,,	—	Scattered tubercles and superficial and marginal patches.	One tubercle and numerous surface pits.
	,,	10·0	1313	1750	1720	107	,,	—	Widespread superficial tuberculosis; few nodules in the depth.	Two tubercles and numerous surface pits.
88	,,	21·0†	490	1770	1650	100	Small caseous lesion.	Caseous foci.	A few small caseous nodules.	—
	,,	10·0	471	1670	1450	100	,,	—	,, ,,	3 tubercles.
96	,,	20·0	1192	2260	2850	108	Caseous cyst.	—	2 tubercles.	—

* Those marked with an asterisk died naturally. All the others were killed. † Broth culture.

TABLE III.—*Tabular Summary of Subcutaneous Experiments on Rabbits with Dysgonic Strains.*

No. of case.	Derivation of culture.	Dose in milligrammes.	No. of rabbit.	Weight in grammes. Initial.	Weight in grammes. Final.	Duration of life in days.	Result.
2	Direct.	10	359	2100	1650	70	G T
	,,	10	360	1590	1200	42	G T
5	Through G P.	10	361	1490	1020	41	G T
	,,	10	362	1660	1290	51	G T
11	,,	10	436	2590	1612	59	G T
	,,	10	437	1280	720	38	G T
14	,,	10	456	1610	1280	26	G T[1]
	,,	10	525	2960	2260	72	G T[2]
	,,	10	753	1420	1190	50	G T
	,,	10	754	1600	1150	42	G T
19	,,	10	519	2060	1470	87	G T
	,,	10	520	2000	1300	58	G T
	Direct.	10	542	1890	1600	40	G T
	,,	10	543	1520	1400	32	G T
20	Through G P.	11	575	1700	1540	76	G T
	,,	10	741	1490	1030	39	G T
	,,	10	742	1410	1100	16	E G T[3]
23	,,	10	541	1710	1650	38	G T
	,,	10	696	1250	960	63	G T[4]
	,,	10	697	1320	1160	48	G T
28	Direct.	9	542	1430	1400	40	G T
	,,	10	543	1520	1400	32	G T
37	Direct.	10	608	2150	1630	42	G T
	,,	10	609	1510	1150	48	G T
38	,,	10	648	2410	1660	50	G T
	,,	10	649	2570	1550	61	G T
40	Through G P.	10	707	2100	1470	43	G T
	,,	10	708	1700	1170	57	G T
44	Direct.	10	755	1970	1100	39	G T
	,,	10	756	2070	1430	73	G T
47	Through G P.	10	951	2240	1400	69	G T
	,,	15	1021	1800	1420	45	G T
	Rabbit 1021 (spleen).	9	1233	1940	1280	52	G T
	Rabbit 1233 (kidney).	5	1407	1740	1500	44* (ill)	G T[5]
48	Through G P.	10	1022	1660	1040	35	G T
	,,	10	1023	1150	870	28	G T
	Rabbit 1022 (portal gland)	5	1234	2340	2040	52*	G T
	Rabbit 1234 (kidney).	5	1408	1620	1450	41	G T[6]
49	Through G P.	10	986	1810	1520	48	G T
	,,	10	987	1310	930	28	G T (mo l.)
58	Direct.	10	1142	1600	1050	50	G T
	,,	10	1143	1660	1300	86	G T[7]
59	Through G P.	10	1013	1650	1160	60	G T
	,,	10	1014	1640	1770	57	G T
63	Direct.	10	1015	1700	1150	60	G T (mod.)
	,,	10	1016	1260	980	39	G T
64	Through G P	10	1054	1240	1040	39	G T
	,,	10	1055	1290	1030	43	G T
66	,,	10	1056	1840	1160	71	G T
	,,	10	1057	1740	1320	65* (ill)	G T
71	,,	10	1165	2290	1700	61	G T
	,,	10	1335	1860	1260	48	G T
74	Direct.	10	1097	1650	1220	47	G T
	,,	10	1098	1900	1150	40	G T
77	,,	10	1144	1800	1310	63	G T
	,,	10	1145	1850	1245	70	G T
81	,,	10	1178	1570	1160	40	G T
	,,	10	1179	1570	1070	45	G T
82	Through G P.	10	1198	1340	990	33	G T
	,,	10	1199	1440	1070	52	G T
84	Through G P.	10	1235	1920	1470	47	G T
	,,	10	1236	1900	1800	67	G T
86	Direct.	10	1180	1590	1000	42	G T
	,,	10	1181	1420	960	33	G T
87	Through G P.	10	1200	1450	1400	54	G T
	,,	10	1201	1220	1000	19	E G T
	,,	10	1292	2480	1720	30	G T
	,,	10	1293	1370	1050	45	G T
89	,,	10	1205	1370	1350	35	G T
	,,	10	1206	1370	1250	35	G T
90	Direct.	5	1166	1570	1050	33	G T[8]
	,,	10	1167	2000	1890	48	G T
	,,	10	1336	1600	1030	68	G T
91	Through G P.	10	1294	1430	1170	26	G T
	,,	10	1295	1480	1450	45	G T[9]
94	,,	10	1207	1320	1000	27	G T
	,,	10	1208	1270	1030	32	G T
102	,,	10	1263	2130	1650	48	G T
	,,	10	1310	1780	1120	28	G T
	,,	10	1311	1930	1470	55	G T
53	Direct.	10	517	2050	1500	38	G T
	,,	10	518	2070	1440	56	G T

Note.—* Those marked with an asterisk were killed. All the others died. G T = General tuberculosis. G T[1] = General submiliary tuberculosis of moderate severity. G T[2] = General tuberculosis severe in lungs only; kidneys only slightly affected, liver and spleen normal; popliteal glands contained caseous tubercles, but others, excluding those nearest local lesion which were extensively caseous, were normal. E G T[3] = Early general tuberculosis, liver peppered with minute grey foci. G T[4] = General tuberculosis of moderate severity only. G T[5] = General tuberculosis (cultures from the portal and popliteal glands of Rabbit 1407 resembled the original culture in cultural characters). G T[6] = General tuberculosis (cultures from the kidney and popliteal gland of Rabbit 1408 resembled the original culture). G T[7] = General tuberculosis (not quite of full severity). G T[8] = General tuberculosis moderate. Death from pseudo-tuberculosis of liver. G T[9] = General tuberculosis not of maximum severity.

tuberculosis in guinea-pigs nor yield cultures. I am indebted to them for giving me the details of their experiments and for allowing me to include these five cases in my series.]

(For details of the cases referred to above see Tables I., II., and III.)

Of the several observers who have made bacteriological investigation of cervical gland tuberculosis one only (Duval[19]) claims to have isolated atypical tubercle bacilli. Duval isolated cultures from four cases of cervical adenitis of an unusual clinical type. Three of his cultures are classified as atypical —respectively human, bovine, and avian—and the fourth as a standard human strain. His atypical cultures bear no resemblance, judging from the information given as to cultural characters and virulence, to any of my atypical lupus strains, nor indeed to any tubercle bacilli hitherto described. As Duval's results are exceptional and without confirmation it is unnecessary to refer to them more particularly here. The cultures isolated from cases of cervical gland tuberculosis by other investigators who have given details of their experiments are clearly either of standard human or of standard bovine type. Whether or not any of Mitchell's cervical gland cultures varied from the standard in respect of virulence I am not able to judge, as this author has not given any details of individual rabbit experiments.

Relation of Macroscopic Characters of the Glands and Numbers of Tubercle Bacilli present to the Type of Infection.

In each case the macroscopical appearances of the glands on section have been recorded with the object eventually of determining whether or not these presented differences corresponding to the type of infection. Careful comparison has not revealed any macroscopical character which is peculiar to one type of infection. On the other hand, microscopical examination would appear sometimes to yield evidence indicating type of infection. When there are numerous short well-stained tubercle bacilli the probability is that a bovine infection is being dealt with. In the series yielding cultures there were numerous or moderately numerous short tubercle bacilli in eight cases, and in each of these cases bovine tubercle bacilli were isolated. In Oehlecker's series[4] of 14 cases there were numerous short tubercle bacilli in the only cases (4) which yielded bovine cultures. Bovine infections, however, are not always associated with numerous tubercle bacilli in the lesions. Seventeen of the cases from which bovine tubercle bacilli were obtained in culture showed no, or extremely few, tubercle bacilli microscopically. In human infections tubercle bacilli are usually very scanty. In only 2 out of 33 "human" cases in which microscopical examinations were made were tubercle bacilli found in moderate numbers.

Clinical Aspects.

The clinical information with which I have been supplied contains some features of interest which are briefly detailed in the abstracts below.

CASE 2.—Aged 23. Bovine infection. History of seven or eight years' trouble with glands on both sides of neck and in one axilla. She had been operated on altogether six times by Mr. Thelwall Thomas and Mr. Kelly. She stated that she was very fond of cows' milk and always drank it unboiled. Teeth very carious.

CASE 4.—Aged 39. Human infection. Twelve years' history. She had had five operations, exacerbation leading to operation all following confinement. Of four children, one suffered from chest trouble, one from tuberculous wrist, and a third from glands in the neck.

CASE 14.—Aged 19. Bovine infection. Four months' history. She had been in the habit of drinking cows' milk unboiled and had several very carious teeth. There was a large mass of glands beneath the left sterno-mastoid. Two years after operation she was seen by Mr. Kelly, who found only one small gland low down in the neck—not worth operation.

CASE 24.—Aged 24. Human infection. Five years' history. Had had three operations.

CASE 46.—Aged 17. Human infection. Glands noticed only two months before operation. She had been under treatment for some time with well-marked signs of cavity in left apex.

CASE 47.—Aged 14. Bovine infection. Enlarged submental glands for some years, and abscesses had formed and burst three times.

CASE 48.—Aged 18. Bovine infection. Three years' history. Two operations.

CASE 62.—Aged 9. Human infection. Chronic enlargement of cervical and axillary glands, both sides, for two years. Had had three operations. Many carious teeth when first seen.

CASE 68.—Aged 8. Human infection. Case of old empyema. Axillary glands affected on side of operation for resection of rib.

CASE 74.—Aged 6/12. Bovine infection. There was also a tuberculous lesion of the hand.

CASE 77.—Aged 41. Bovine infection. Five years' history. There were enlarged glands in both posterior triangles and both tonsils were enlarged. He had been accustomed to drink unboiled cows' milk. Eleven months after operation he writes to say that his neck was fuller than ever of glands.

CASE 81.—Aged 9. Bovine infection. Child said not to have taken milk except in puddings. After the operation a small swelling appeared under the site of operation, but after a time this began slowly to dwindle and further operation was considered unnecessary. The general health of the child was good. There was no family history of tuberculosis.

CASE 86.—Aged 13. Bovine infection. About six weeks' history. Large mass of glands on left side of neck. Patient died at end of operation from heart failure. The post-mortem examination showed perihepatitis and perisplenitis, and greatly enlarged caseous mesenteric glands.

In a few other cases, both human and bovine, it has been ascertained that the operation was completely successful and that there had been no recurrence. Of 11 cases in which it was stated that there was no family history of tuberculosis, 3 yielded human tubercle bacilli and 8 bovine tubercle bacilli. Family history of tuberculosis was given in 2 cases; one of these was infected with human, the other with bovine tubercle bacilli.

Statistical Data.

For the purposes of this section I shall utilise only those cases which yielded cultures and which are believed to be primary in the cervical glands. Three of the 71 positive cases must therefore be excluded. One (No. 46) was a case of cervical adenitis which was probably secondary to tuberculous disease of the lungs. The other two (Nos. 68 and 90) were cases of tuberculosis of the axillary glands, the cervical glands being unaffected. There remain 68 cases of cervical gland tuberculosis, presumed to be primary in the cervical glands, of which 35 yielded cultures of human tubercle bacilli and 33 cultures of bovine tubercle bacilli. The case (No. 52) in which the femoral glands were the original material is included in the 68 cases, because the cervical glands were also tuberculous.

Table IV. shows the relative incidence of human and bovine infections at various age-periods in this series of 68 cases.

TABLE IV.

Age-periods.	Number infected with— Human T.B.	Bovine T.B.	T.B. dead in—
Under 5 years	1 (10·0%)	9 (90·0%)	6 (37·4%)
5 to 10 years	7 (39·9%)	11 (61·1%)	8 (30·7%)
10 to 15 years	8 (61·5%)	5 (38·5%)	5 (27·7%)
15 to 20 years	6 (60·0%)	4 (40·0%)	2 (16·6%)
20 and upwards ...	13 (76·5%)	4 (23·5%)	5 (22·7%)
Totals	35 (51·5%)	33 (48·5%)	26 + 3 in whichage not stated (30%).

The proportion of bovine infections is highest in children under 5 years of age and lowest in adult life. The incidence on adults is not, however, unimportant. The percentage of adults over 20 years of age infected with bovine tubercle bacilli is in fact remarkably high, and is higher than has been recorded in any other series of cervical gland cases or in any other variety of tuberculosis in the adult.

In the next table (V.) the cases are analysed in accordance with the locality from which they were derived.

TABLE V.

Locality.	Under 5 years.		5 to 15 years.		15 and upwards.	
	H	B	H	B	H	B
London	—	4	6		8	3
Margate	—	—	1	2	1	—
Cambridge	—	—	1	2	1	1
Birmingham	—	1	1	—	—	—
Macclesfield	—	—	—	1	1	—
Liverpool	—	—	—	—	3	2
Newcastle	—	1	3	1	4	—
Glasgow	—	2	2	3	1	1
Edinburgh	1	1	1	4	—	1

H = Human infections. B = Bovine infections.

The figures are not large enough for comparative statistical purposes as between different centres of population, but set out in the above manner they show quite clearly that none of the localities investigated enjoys freedom from risk of infection with bovine tubercle bacilli.

More reliable percentage figures are obtained by combining the cases into three groups, to represent respectively London and district, the rest of England, and Scotland. These figures are exhibited in Table VI., and for purposes of comparison the principal American and German figures, the total cases reported in all countries down to July, 1912, and Mitchell's figures for Edinburgh are set out in similar fashion.

The American, German, and combined figures are taken from the tables compiled by Park and Krumwiede.[11]

The table shows that in my series the proportion of persons infected with bovine tubercle bacilli in London and district and the rest of England is much about the same, while in Scotland the proportion is much higher. The Scotch figures afford corroboration of the conclusion arrived at by Mitchell as a result of his investigations of cervical gland tuberculosis that infections with bovine tubercle bacilli in this variety of tuberculosis are very prevalent in Edinburgh. Mitchell's inquiries were confined to persons aged 12 years and under. My figures suggest the importance of making in Scotland a more extended investigation of cervical gland tuberculosis in adolescents and adults.

TABLE VI.

Country.	Under 5 years.		5 to 15 years.		15 and upwards.	
	H	B	H	B	H	B
England — London and district ...	—	4 (100·0%)	7	5 (41·6%)	9	3 (25·0%)
England — Rest of ...	—	2 ,,	5	4 (44·4%)	9	3 (25·0%)
Scotland	1	3 (75·0%)	3	7 (70·0%)	1	2 (66·6%)
America	6	16 (73·0%)	23*	15 (40·0%)	14†	1 (6·6%)
Germany	7	4 (36·3%)	8*	4 (33·3%)	12†	0
Total cases reported down to July, 1912 ...	15	24 (61·0%)	36*	22 (38·0%)	36†	1 (2·7%)
Edinburgh (Mitchell, 1914)	3	35 (92·0%)	4†	30 (88·0%)	—	—

* 5 to 16 years. † 16 and upwards. ‡ 5 to 12 years.

The proportion of bovine infections in cervical gland tuberculosis in England, while less than that in Scotland, is higher than it is in other countries. Of the four countries for which there are separate data in Table VI. Germany gives the lowest percentages of bovine infections. There is not much difference between the English and American percentage figures (respectively 55·5 and 51·7) for persons under 15 years of age, but for persons over 15 years of age the proportion of cases in which the infection was "bovine" is considerably lower in America than in England.

The greater part of the work here reported on was done during my tenure of one of the scholarships of the Grocers' Company and with funds supplied partly by the Grocers' Company and partly by Professor G. Sims Woodhead. In recent months the expenses of the inquiry have been borne by the Medical Research Committee. I desire to acknowledge my indebtedness to these sources for the means, and to Professor Woodhead for the use of the Pathological Department of the Field Laboratories, University of Cambridge, to carry out the bacteriological work.

Bibliography.—1. Tuberkulose - Arbeiten aus dem Kaiserlichen Gesundheitsamte, Heft 11, 1912. 2. Ibid., Heft 6, 1907. 3. F. Griffith, Royal Commission on Tuberculosis, Final Report, Appendix, vol iv. 4. Eastwood and F. Griffith, Local Government Board Reports, New Series, No. 91. 5. Royal Commission on Tuberculosis, Final Report, Appendix, vol. i. 6. Local Government Board Reports, New Series, No. 88. 7. Journal of Experimental Medicine, 1910, xii., p. 82. 8. Deutsche Zeitschrift für Chirurgie, August, 1910. 9. Brit. Med. Jour., Jan. 17th, 1914. 10. Journal of Experimental Medicine, vol. xi., 1909. 11. Journal of Medical Research, vol. xxiii., 1910, and vol. xxvii., 1912-13, p. 112.

Cambridge.

ROYAL NATIONAL SANATORIUM, BOURNEMOUTH.—The committee of management of this institution have under consideration a scheme for forming a "sanatorium colony" in conjunction with the present institution. It is proposed that a piece of land, about seven or eight miles from Bournemouth, should be acquired on which could be erected simple buildings to accommodate 40 patients. To this colony could be drafted all patients who, after careful selection, were considered suitable for employment on various grades of work. The advantage of the scheme would be the separation of advanced cases from those only slightly affected. The cost of the scheme will be between £3000 and £5000, but this is less than the accumulated surplus income of the sanatorium during the past three years. The result of the deliberations of the committee of management will be submitted to a special meeting of the governors.

NOTES ON RHEUMATISM IN CHILDREN.[1]

BY MARY H. WILLIAMS, M.B., B.S. LOND., D.P.H. CAMB.,
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IT is hardly possible to read a medical journal of any description without coming across an article on some form of tuberculosis, and recently legislation has even more strongly called attention to its importance. Mothers are willing to take much trouble for their children if one tells them the child is tuberculous, so thoroughly are they imbued with terror of this disease. But I am inclined to believe that in England as much, or more, misery is caused by the disease we call rheumatism, and each year I live I find cause to study some fresh manifestation of this widespread disease.

The laity commonly regard rheumatism as a disease of the elderly, and believe that its chief harm lies in the pain it causes. I believe that it is a disease which almost always begins in early childhood, and that in its crippling effects it is second to none. It is responsible for a large amount of heart disease and for an infinitely larger number of cases of ill-health which are frequently labelled "debility." The common view as regards the sequence of events appears to be that "growing pains" come before the heart is affected. Dr. R. Hutchison writes[2]: "If they [the growing pains] are neglected the child ..... may very easily slide into endocarditis," but I hope to show that the germ commonly first attacks the heart and only later causes symptoms in muscles and fasciæ.

The little I know about rheumatism in children has been learnt almost entirely in my work in the schools, for, with the exception of Dr. F. J. Poynton's book, there is not much to be learnt about it from current literature. So I have had to formulate my own views, and hence must ask for indulgence if I differ from any of my audience. My views have developed as the result of watching given children for long periods, 5, 6, 7, or even more years, and noting how one condition precedes, and passes into, another.

I started school work in 1904, believing that there was very little rheumatism in children. The first method I used to ascertain if a child was rheumatic was to ask if he ever had "growing pains," and I was absolutely startled to find how many children gave a definite affirmative answer to the direct question. A few had volunteered this information before I started asking directly. Then came the question as to whether "growing pains" always connote rheumatism, and this forces me to what I should like to avoid—a definition. So I will shortly define rheumatism as the disease due to an infection with a specific micrococcus, probably that described by Poynton and Paine or one closely related to it. The syndrome of rheumatism includes symptoms due to lesions in the musculature and valves of the heart, pains in joints and muscles, abnormal excitability of nerves and brain shown in some cases by actual chorea, anæmia, with continued pyrexia. I regard malignant endocarditis as being commonly a severe form of septicæmic rheumatism, though quite recognising that in a few cases other germs are the primary cause.

Taking this definition to work upon, I believe that in young girls aching of the legs, which occurs both by night and by day, is almost always due to rheumatism. In boys I am inclined to think that a certain amount of aching can be caused by strenuous games even without rheumatism. But true rheumatic "growing pains" are generally worse after exercise, and at first may occur *only* after exercise. In many cases they are worse at night, and in such cases the diagnosis is at once clear. Also if they occur only, or chiefly, in wet weather they are due to the rheumatic toxin. Aching of the legs due to syphilis may occur, but I do not think that it is frequent in children. The aching which occurs during or before menstruation also needs mention, but can easily be differentiated by a few questions. Apart from these forms of aching there also needs to be differentiated a somewhat uncommon condition, aching of the joints or muscles due to the tubercular toxin, a tuberculous arthritis. So-called arthritis sicca, a dry form of tuberculous arthritis, has long been recognised, and this is sometimes, though by no means always, accompanied by pain. This condition is most easily recognised in the shoulder, because when auscultating the back one hears a dry crepitant sound, and on placing a hand on the shoulder one feels a creaking sensation. The creaking is produced in the muscle and can be lessened, or obliterated, by the arm being drawn backwards. Later there may be grating in the joint, but the early sounds are, I believe, distinct in origin. I believe this condition is practically always due to a tuberculous infection and not a rheumatic one.

The "growing pains" are the symptom most commonly recognised as due to rheumatism, but they are by no means the earliest or the most important. The typically rheumatic child can be differentiated by the age of 5, and, for all I know, far earlier. The reason why I name this age is because I see far more children at 5 than earlier, and I also find that the examination of children grows gradually more and more difficult as we come to deal with them at the earlier ages. At 5, such a child is often well nourished, perhaps somewhat thin, but one in regard to whom no complaint is made by the mother unless she says either that he is nervous or is "mincing" with his food. On examination, one obtains a history of rheumatism in the relations. When one takes the child on one's knee in order to count the pulse, one at once notices that he is not for one moment at rest, some part of his body is in incessant movement. The hand is not kept still long enough to make it possible to count the pulse for 60 seconds consecutively, one has to count it in successive quarter minutes The hand is constantly making little, quick, jerky movements. And, without questioning, the parent will often remark that he is never still. Teachers complain that he fidgets. Then, on counting the pulse, one finds that it is above the rate of the child who has not acquired the rheumatic infection. So little work has been done on the pulse-rate that I carefully avoid the expression "the normal rate," but I have now many hundreds of records of five-year old children, and the children we are considering have a pulse-rate above that of tuberculous children, the rate often reaching 100 or over. Lately I have been seeing, for the second or third time, older children, in regard to whom the only note of abnormality made when they were first

[1] A paper read at a meeting of the Registered Medical Women's Association, London, on May 11th, 1915.
[2] Lectures on Diseases of Children, 1913, p. 170

examined at 5 years was "tachycardia," and practically all of these are now definitely rheumatic. Moreover, this pulse-rate persists for years, and is not definitely higher on first taking. The variation is often extraordinarily small. I have notes where the variation shown over several years is only two or three beats per minute. In addition to the quick pulse-rate, such children frequently have continued pyrexia, with temperatures ranging from 99·4° to 100·4° F. It will be argued that this is due to "nervousness," but I now have records of some 5000 temperatures, and, as a rule, the second time of taking it is practically the same as the first. If the raised temperature were due to nervousness the second temperature would be lower than the first. This raised temperature persists for years throughout school life and the small amount of variation is remarkable. In work undertaken in collaboration with Professor Karl Pearson and Miss Julia Bell[3] we showed that this raised temperature is not merely due to age. Control takings were made at several public schools, both for boys and girls, and these showed that children of richer parents have not such raised temperatures.

In a few cases, even as early as 5 years of age, growing pains are already present, but I regard these cases as of a more severe type than when the only signs are pyrexia, quick pulse, and nervousness. On inspection the heart's impulse is often widely visible, and on palpation it gives to the fingers a sensation of fluttering. On auscultation one finds that the common trouble at the bases of the lungs (which occurs at an earlier age and which I believe to be of tuberculous origin) has nearly cleared up, and often far more completely cleared up than in a child of a non-rheumatic family. There may be high-pitched expiration or harsh breathing. The apex beat may be outside the nipple line, which is not the case in non-rheumatic children. At a recent discussion at which various cardiac specialists took part, the ordinary position of the apex beat in children was discussed, and opinions varied as to whether it is within, or without, the nipple line. I think that the difficulty came from the fact that in rheumatic children it is often in or outside the nipple line, and there are so many such children in any hospital clinic, recognised or unrecognised, that statistics based on such figures, obtained without definite exclusion of rheumatic children, ought not to be regarded as representing facts concerning healthy children.

In some cases the cardiac sounds are altered, a muffling being perhaps the most common change, but I do not often hear bruits indicating actual valvular roughening. At this stage I think that the change consists in a weakening of the myocardium, which I believe to be toxic, but which it is possible may some day be shown to be due to actual rheumatic nodules in the musculature of the heart. This is the stage when, I believe, further development of rheumatism can be prevented, and, if this occurs, little permanent change remains. But, unfortunately, except in the children of the rich, the existence of the disease is not recognised at this age and hence the later stages are so appallingly frequent.

[3] Drapers' Company Research Memoirs: Studies in National Deterioration, IX.; A Statistical Study of Oral Temperatures in School Children, with Special Reference to Parental Environment and Class Differences, by M. H. Williams, M.B., Prof. K. Pearson, F.R.S., and Julia Bell, M.A.

At some age between 5 and 12, a common symptom is abdominal pain, and also, I believe, attacks of appendicitis, almost always labelled "bilious attacks." In 3 out of 7 attacks, of which I have notes, there was a definite rigidity over the appendix. In 8 patients whom I questioned directly after they had been operated upon for appendicitis, I obtained, without leading questions, a history of bilious attacks in 7. I do not mean to suggest that the rheumatic germ is responsible for all attacks of appendicitis, but I think that "bilious attacks" in children generally precede recognised appendicitis, that they are, in reality, frequently slight attacks of appendicitis, and that both bilious attacks and appendicitis are more frequent in rheumatic children, or in persons with a rheumatic family history; and that it is at least possible that the same germ which causes the rheumatic nodules in the valves of the heart causes similar nodules in the region of the appendix. I gradually became so convinced by the cases I saw of some connexion between rheumatism and appendicitis that it has been a great pleasure to me to realise that other workers are also studying the subject from this aspect. In Poynton and Paine's book[4] an account is given of appendicitis produced in rabbits by the intravenous inoculation of diplococci grown from a case which was clinically rheumatic fever. The rabbits used were young, and the diplococci were recovered from the joints, the heart blood, and the peritoneal fluid.[5] In one case recorded, a patient with appendicitis had also some inflammation of a tonsil, and from both a diplococcus was obtained which appeared microscopically and culturally the same, and which gave rise to arthritis when injected into young rabbits.

That children in rheumatic families have frequent sore throats is well known, and many cases in consequence undergo operation on the tonsils. I should like to take the opportunity of protesting against enucleation of the tonsils. It is often said that guillotining is no good, for the condition recurs. For several years I have kept detailed notes of all the operation cases I have seen, most of them done by general practitioners, and I find that in the majority of cases, *if the operation is not done at too early an age*, the result is a cure; and I think whether it is or not, one has no right to remove organs until one is sure that their influence for good is less potent than their influence for evil. It is possible that the rheumatic germ grows in the tonsils, but, on the other hand, it has been argued[6] that the tonsils have a protective function. They may thus act as a barrier against rheumatism, and may only fail in this duty under repeated and severe attacks of the germ. If so, I think some portion should be left for defensive purposes.

The question as to whether chorea is or is not part of the rheumatic syndrome has been debated so many times, and the positive evidence is so great, that I think I need do no more than express my adherence to this view. If anyone is interested in working at the question further, I would be happy to afford facilities of studying my records of some thousands of cases which I regard as rheumatic, in regard to each of which is recorded the exact evidence on which the view was formed, and among the data would be found cases of chorea. I

[4] Researches on Rheumatism, Poynton and Paine, 1913, pp. 366 et seq.
[5] Loc. cit., p. 374.
[6] Digby: THE LANCET, Jan. 20th, 1912, p. 160.

have no case of chorea as occurring in any but a rheumatic child, and I dissent from the view urged by Professor Poncet that the ordinary type of chorea is often caused by the tubercle bacillus.[7]

The mention of the tubercle bacillus brings me to a point at which I can state a theory which I have worked out—viz., that rheumatism and pulmonary tuberculosis are antagonistic and not active at the same time in the same child. Predisposition to rheumatism is strongly hereditary, and the figure based on my investigations has worked out at 0·46. I may say that the figure[8] for inheritance of stature is 0·51, for length of arm 0·5, and for insanity 0·47. Hence our heredity figure for rheumatism is strictly comparable to figures for other inherited characteristics. But, in addition, rheumatism in the parent appears to protect the child in a definite degree from pulmonary tuberculosis.[9] The antagonism between rheumatism and pulmonary tuberculosis has also been noticed by Sir Dyce Duckworth[10] and by Dr. R. H. Miller,[11] of Paddington Green Children's Hospital, and I have now thousands of records supporting this view.

But to come back to our rheumatic boy. By the time he is 12 he is probably in fair health but too thin, perhaps pale, and too easily out of breath. Also football or long walks cause leg aching. The apex beat is very likely to be found in or outside the nipple line. The impulse is very visible, far too diffuse, and on feeling it one is sensible of a kind of fluttering sensation. There may be a definite bruit with unmistakable involvement of the mitral valve. For many years I worried myself because at hospital it always seemed to me that everybody heard murmurs before I did, and I feared that I missed important lesions. Later, I had opportunities of comparing what I heard with what was heard by skilled auscultators, and so gradually learnt to know more. But for the consolation of any of the younger practitioners who may still feel as I did, I would say that, in children, not being able to hear murmurs does not matter. If there is enough wrong to need any degree of care the fact will be learnt more surely by the use of eyes and fingers than by the aid of the stethoscope. And if we trust more to our eyes and our fingers we shall, I hope, soon cease to talk of "functional" disease of the heart. The only definition of "functional" disease of the heart which I am willing to accept is the following: "A disease whose pathology I have not yet ascertained." The fact that the conditions, possibly the murmurs, in a child's heart are constantly changing is no reason for calling it "functional." If a sound is present one day and not the next it probably shows exhaustion of the muscle or activity of the rheumatic germ. So long as we call disease "functional" the inference is that it does not matter.

The sooner that we recognise that heart disease in a child is practically always due to rheumatism the sooner we shall get sufficient care taken to prevent the condition getting worse. In many congenital cases also I have obtained so strong a rheumatic family history, including disease in the mother, that I believe that here, also, rheumatism is often responsible.

Rheumatism is one of the commonest diseases of children and the most crippling in later life. But the disease does not now figure among those scheduled by the Board of Education, in spite of repeated attention being drawn to it by many doctors working in the schools. Heart disease is in the schedule, but not the disease of which heart disease is only a prominent symptom.

It does not yet appear to be sufficiently recognised that the rheumatic toxin is as capable of causing anæmia as the germ of tubercle or syphilis, and that in young people it is one of the commonest causes. In a recent interesting work, when writing of the anæmia of adolescence[12] Dr. Stacey Wilson separates "the anæmia definitely secondary to diseases such as phthisis and chronic nephritis" from "those which occur in the simple anæmia of adolescence" because "the cardiac phenomena are usually different." But I am gradually becoming convinced that the primary cause of many such "simple anæmias" is the continuous action during the years of childhood and adolescence of small doses of the rheumatic toxin, and environmental conditions supposed to be responsible for these anæmias are merely the causes which so increase the action of the toxin that symptoms are produced.

So far I have said nothing of treatment, and in regard to this matter I much hope to learn from those who have more practical experience of it than I. To my mind the riddle is unanswerable. The large proportion of the children in our schools have constant pyrexia; in rheumatic cases it is due to the rheumatic toxin, which at this age acts mainly on the heart. The first order I should like to give is, "Rest"; the second is, "Keep warm and dry"; and the third, "Good food." Yet I am in doubt which order is most hopeless.

The law compels the children of the poor to attend school in all weathers unless they can be proved to be definitely ill. Many of the country children have to walk two or three miles over fields or along wet muddy lanes, and then sit in cold schoolrooms. The cost of flannel makes the desirable form of clothing almost out of reach, and the small knowledge of cooking possessed by the women makes nourishing food a rarity. The wonder to me is not that a large number of our adults end their lives crippled with rheumatism, and a further large number die from heart disease, but that any of the poor escape the disease. I believe that we have something to thank tuberculosis for in that it renders some families more resistant to that disease which I consider the more deadly.

As regards the distribution of rheumatism, my figures show that rheumatism (as distinct from rheumatic fever) is more common in rural districts. So far as rheumatic fever goes, I have not found a greater frequency in urban than in rural areas.

When writing of valvular disease due to rheumatic fever, Dr. Harrison says[13]: "There is a special tendency to valvular disease in towns," and I have wondered if the frequency of slight rheumatism in children in the country districts is the *cause* of the comparative rarity of rheumatic fever in adults—i.e., is the early rheumatism an immunising process which protects from the more dangerous effects in the majority of cases? We often see it debated why mitral disease is so rarely found in post-mortem examinations on those dying from pulmonary tuberculosis. But if rheumatism and pulmonary tuberculosis are antagonistic, and mitral disease is generally due to rheumatism, then this absence of mitral disease would be bound to occur.

Colwall, Malvern.

[7] La Tuberculose Inflammatoire, par A. Poncet et R. Leriche, 1912, p. 240.
[8] A Statistical Study in Oral Temperature, loc. cit., p. 45.
[9] Loc. cit., p. 52.
[10] Practitioner, January, 1912.
[11] Medical Diseases of Children, 1911.
[12] The Early Diagnosis of Heart-failure, Dr. Stacey Wilson, p. 226.
[13] Journal of the R.A.M.C., August, 1914.

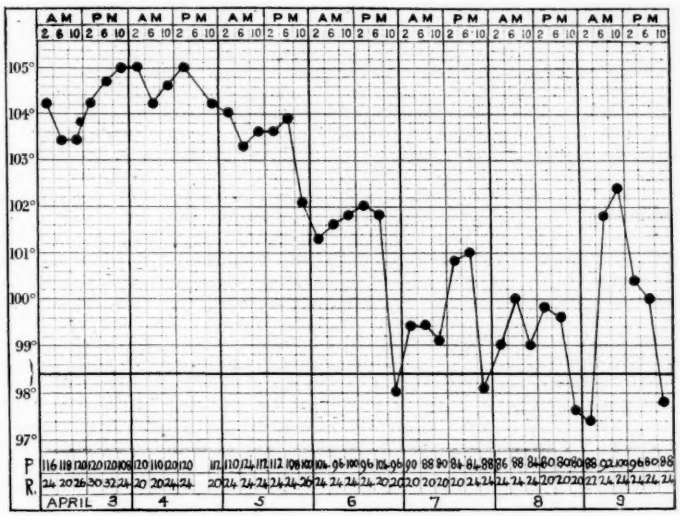
A CASE OF TETRAGENUS SEPTICÆMIA.

BY HENRY ROBINSON, M.A., M.D. CANTAB.,
TEMPORARY LIEUTENANT, R.A.M.C.

A PRIVATE soldier of three years' service and 23 years of age was admitted to hospital on March 18th, 1915, complaining of pain in the feet of about six days' duration, with steadily increasing malaise, weakness, and anorexia. He had also a slight headache and a very slight cough. There had been some abdominal pain at the commencement of the illness, but this passed off before the man came under observation. On admission he was constipated, as is not unusual in men who have been a long journey on an ambulance train. He had not vomited, and there had been no nose-bleeding or sore-throat.

The only account of previous illness was a fever of some kind in India about a year before. The patient had never had rheumatism. He had been three times inoculated against enteric fever, the last time nearly a year previously.

On admission he looked fairly comfortable; not flushed; no herpes. He was rather deaf, and in view of a subsequent occurrence it is regrettable that no inspection of the ears was made. The tongue was red at the edges and furred in the centre. Temperature 103° F. The pulse-rate was 120 on admission, but it dropped soon afterwards to under 100; regular, low tension; skin moist, no rheumatic smell.



Four-hour chart from April 2nd to April 9th.

On examination nothing abnormal was found in the lungs. The heart's apex was just internal to the nipple in the fifth interspace. A soft blowing apical murmur was present; heard also at the basal region. There was no abdominal distension, gurgling, tenderness, or rigidity; no spots. The spleen was doubtfully palpable. There was no swelling or redness of the feet, though they were tender when handled. A diagnosis of acute rheumatism was made, and 20-grain doses of salicylate of soda with equal amounts of bicarbonate were given four-hourly, together with a brisk purge. On the off-chance of the case being one of enteric fever blood was withdrawn from a vein for cultivation. It was submitted to Lieutenant M. K. Acheson, R.A.M.C., bacteriologist, who found it sterile.

Under treatment the temperature fell rapidly, and became absolutely normal after six days. On March 22nd the man was much better in every way, and it is noted that the apical first sound was then almost normal, but still slightly impure. On the 26th the murmur was once more in evidence, though in other ways the patient had improved. On the following day salicylate treatment was discontinued altogether; the dosage had already been cut down as the symptoms ameliorated. The diet was cautiously advanced and absolute recumbency was maintained. On March 31st there was a slight nocturnal rise of temperature, and next morning a sudden return of pain in the legs and malaise occurred, together with a temperature of over 103°. Soon afterwards a condition of apathy almost verging on coma set in. There was no swelling or redness of the joints. Large doses of salicylate were once more exhibited, but this time without the slightest effect. The cardiac murmur was still present. On April 3rd the man complained of pains in the ankles, shoulders, and spine, but nothing abnormal was detected on examination of those regions. The temperature was 104°, the pulse-rate was 128, and the cardiac murmur had entirely disappeared. No petechiæ or abscesses were present. A diagnosis of infective endocarditis was arrived at; a further sample of blood was taken for culture and the salicylate was discontinued.

On the following day (April 4th) the patient, who had originally been admitted into a surgical ward, was transferred to the medical division of the hospital, and until my own transfer about three weeks later I lost direct touch with him. During this time he was under the care of Lieutenant A. T. Todd, R.A.M.C., with whom I saw the man occasionally in consultation. The case notes were carried on by Lieutenant Todd, and I am indebted to him for the particulars of this part of the illness.

On April 4th, on taking over the case, Lieutenant Todd's notes state that the man was slightly cyanosed. He complained chiefly of pain over the pericardium and base of the left lung. A double mitral murmur was heard at the apex, which was tender. A cough began on this day, and patches of broncho-pneumonia were found in both lungs. The spleen was enlarged. Pulse 120, very weak and dicrotic; temperature 105°. The patient was very delirious. Quinine sulphate in heroic doses was ordered. On the 5th there was a distinct improvement. The cardiac murmurs were unchanged, but the temperature was lower, the pulse less weak and dicrotic, and the cyanosis had disappeared. On the 6th the improvement continued, though there was still some nocturnal delirium. On the 7th he felt better, though the pulse tension was still

very low; there was copious mucopurulent expectoration. Lieutenant Acheson reported that the blood contained the micrococcus tetragenus. By the 10th the temperature was normal and the præcordial pain was much less; there was some blood mixed with the mucopurulent expectoration. On the 14th a general quinine rash was observed, and also a purulent discharge from the right middle ear, but the general condition was much improved and the cardiac murmurs were no longer heard. On the 16th pleuritic pain was present on the left side, and examination showed a small patch of consolidation, with crepitations and blood-stained sputum and a temperature of 100°. Quinine was once more freely pushed. This attack soon subsided, though the sputum was still stained six days later, when the patient was feeling much better and asking for food.

About this time Lieutenant Todd left for the front, and the patient came once more under my care. I found the heart sounds normal, the cough practically gone, and, apart from weakness, hardly any morbid signs except aural discharge. From this pus Lieutenant Acheson had cultivated a coccus which grew both in pairs and in fours. He was inclined to regard it as the same organism (tetragenus) as that which he had already recovered from the blood. On April 27th the patient developed slight femoral thrombosis on the left side. On May 5th it is noted that the ear had ceased to discharge and the heart sounds were normal, but there was still tenderness, and a hard cord was still palpable along the line of the femoral vein. A few days later the patient was transferred convalescent to a hospital ship.

The exact sequence of events in the pathology of this case is not absolutely certain. The original attack seemed to respond satisfactorily, though not immediately, to salicylate treatment. It may have been true acute rheumatism; alternatively it is arguable that it was really even then a tetragenus infection. When the first relapse took place the diagnosis of infective endocarditis supervening on a simpler rheumatic lesion seemed inevitable, and a bad prognosis was formed. The temperature chart alone would suggest a pneumonia, but it was only after two or three days of high pyrexia that cough and pulmonary signs developed. The middle-ear abscess may have been pyæmic in nature. It would have been of great advantage in deciding this point if the ears had been examined for old perforations on the patient's first admission.

Fortunately Lieutenant Todd had had experience of tetragenus pneumonia at the Royal Victoria Hospital for Sick Children, Edinburgh, where he had found quinine of great value. He had already adopted the same drug in this case before the bacteriological finding was known, and in view of the upshot it would be certainly worth while to treat any future case in the same way. Such text-books of bacteriology as are available on the spot here are practically silent on the pathogenicity to man of the micrococcus tetragenus, and I was very fortunate to find in Lieutenant Todd a colleague with first-hand knowledge of the tetragenus pneumonia, which occasionally attacks children. Even he, however, had not met with a case of blood infection by this organism, so I have thought it worth while to place this case on record in spite of the fact that I am not in a position to give any references to similar cases that may have already been published.

I tender thanks to Lieutenant Todd and Lieutenant Acheson for their valuable help.

NASAL FLAP AND MODIFIED LANGENBECK OPERATIONS FOR CLEFT PALATE.

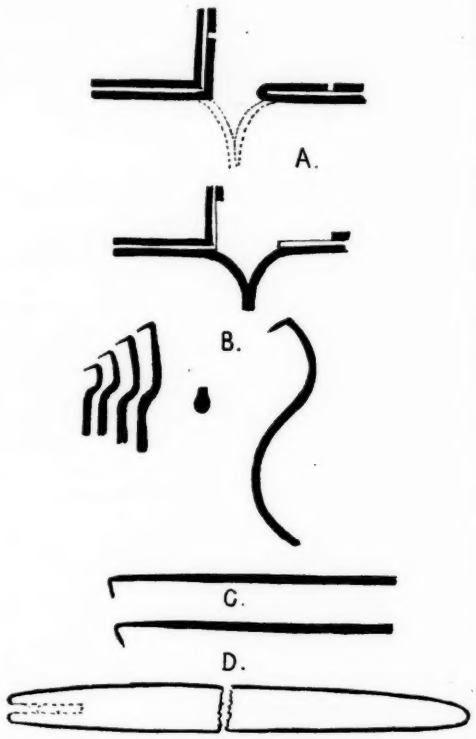
BY G. S. THOMPSON, F.R.C.S. ENG.

ONE of the commonest and most annoying sequelæ of palate operations is the yielding of the line of union, partly from infection, more especially when tension is present, the absolute and universal elimination of tension still being a desideratum that has not yet been realised. By the following operation and technique this defect, particularly in the case of the hard palate, which is the chief offender, can, I think, be satisfactorily overcome in most or all cases. The principle of the operation is the elimination of tension, the reduction of trauma and interference with the blood-supply by the use of flaps obtained from the upper aspects of hard and soft palates, which being turned down into the mouth are united in a V-shaped manner. The raw surfaces of the flaps are apposed, as well as the line of section, thus affording a firmer and more certain bond, and therefore reducing the likelihood of mal- or non-union. A graduated series of knives and raspatories make any width of flap desired to be obtained; moreover, the width is thereby maintained the same throughout. The width of flap required having been decided on the requisite knife is inserted from the mouth through the cleft, then drawn with some force through the muco-periosteum, from end to end, the shaft of the knife being kept in contact with the bony edge of the cleft. The flap thus demarcated is then separated from the nasal surface of the hard palate, drawn inwards and turned down through the cleft into the mouth. The raw surfaces are apposed and united by a few vertically placed mattress sutures and the edge by a continuous catgut suture, the mattress sutures being placed vertically and not horizontally so as not to interfere with the transversely disposed blood-supply to the flap margins. By this device the lateral paradontal incision and separation of palatal muco-periosteum with its involved danger to the blood-supply, not to mention trauma, can be avoided; but for those surgeons who prefer to combine this, the muco-periosteum may be raised through a small puncture near the teeth. So much for the hard palate.

With regard to the soft palate, at the present time a very necessary but most defective step in these operations is the inevitable section of the tensor, and even levator, palati as well as the separation of the nasal portion of the soft from the hard palate, these two factors probably accounting for some or most of the common after-trouble with phonation. I have endeavoured to overcome this cardinal defect in the case of the soft palate in the same way as the hard, but whether as successfully it is at present rather too early to state owing to small experience of these operations. To this end the tip of the soft palate is drawn forward on to the hard, and a longitudinal incision is made on its naso-pharyngeal surface through half its thickness; this incision follows the same line as the intra-nasal section for the hard palate. The flap so marked out is raised, turned into the cleft and down into the mouth, so that later what was part of the upper surface will face the tongue. The two palatal incisions are then united at the posterior edge of the hard palate by curved scissors, thereby giving one long incision and flap from the upper aspect of hard and soft palates from end to end of the fissure.

By this operation I think it can be claimed that the palatal blood-supply is not impaired as is the case with the lateral section method; that important phonatory muscles are scarcely interfered with; that tension is obviated; and that apposing surfaces, more promising of union than edges, are obtained. And although the involved surfaces may be only half the thickness of the ordinary ones, yet this is more than compensated for by the fact that the arteries of supply are all intact, no tension prevails, and the gross trauma to the parts from the ordinary operation is avoided, all of which advantages favour union.

The diagrammatic illustration renders clear the method (A). Should the septum reach the palate the flap on that side is obtained therefrom. B shows



the graduated knives and raspatory in profile, with screw disc on the latter for varying and maintaining the distance from the blade so as to render it adaptable for any width of flap. C indicates the knife and raspatory required for the septum, whilst D is the universal handle. The shape and size of the blade of knives and raspatories are also indicated, the knife having a cutting edge all round. The shafts are about 3 inches long, the handle 6 inches.

I would commend this nasal-flap operation to surgeons, particularly in the case of the hard palate which gives the chief trouble. The operation, if desired, can be performed in two stages.

DIPHTHERIA AT LARBERT.—A serious outbreak of diphtheria has occurred at Larbert, Stirlingshire, and the central school has been closed.

COMPLETE HEART-BLOCK WITH HIGHER VENTRICULAR THAN AURICULAR RATE.

BY EDGAR LEA, M.D. VICT., M.R.C.P. LOND.,
HONORARY PHYSICIAN, ANCOATS HOSPITAL, MANCHESTER.

A CASE of complete heart-block is here reported which presented the following unusual features: 1. An abnormally high and persistent idioventricular rate of 50 to 60 beats per minute, with occasional irregularity of rhythm not wholly due to premature ventricular contractions. 2. A period of sinal bradycardia of frequency 51, during which time the ventricular rate exceeded this. 3. Auricular tachycardia of frequency 200 per minute following the injection of 1/50 gr. atropine sulphate. 4. An unusual relationship between the auricular and ventricular beats during an apparent 3–1 block.

Clinical Description.

The patient, a man aged 38, was admitted into hospital under my care on Sept. 24th, 1913, having suffered recently from fits and dyspnœa. The family history was good. He was a married man with children. As to past history and habits, he had always had good health; no serious illness. He was a total abstainer and a non-smoker. His work had been healthy but laborious. No rheumatism; syphilis denied.

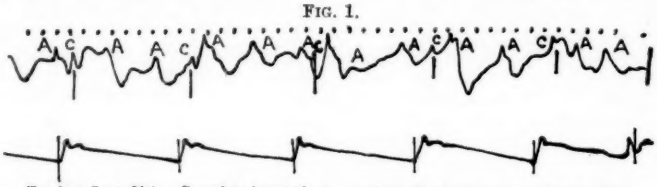
Present illness.—He was quite well up to a month before admission. When going for a walk one afternoon he suddenly lost consciousness and fell down. He regained consciousness, so his friend who was with him told him, in about a minute, and walked home. Another fit occurred at 11.30 that night and another at 4 o'clock the following morning. The next day he had four more fits on his road home from work, falling in the road each time. His doctor saw him that day. For the next three weeks he remained at home. During this time he states that he had three or four fits daily. Since Sept. 21st the attacks had been slighter in severity.

Condition on admission (Sept. 24th).—The patient was a well-built man of more than average height. His complexion was sallow and he looked rather ill. He said that since June he had lost weight, "pounds and pounds." There was considerable œdema of the legs, and the abdomen was a little swollen and felt tight. On examination the pulse was slow, regular, and of good tension; frequency 35·5 per minute. There was fairly well-marked venous pulsation in the neck. Heart: No apex beat was visible; no thrill. The deep limits of cardiac dulness were as follows: right limit, 1¼ inches; left limit, 5 inches from mid-sternal line; upper limit, third rib. On auscultation there was heard at the apex and at the lower end of the sternum a well-defined but not loud systolic murmur which replaced the first sound. The second sound was normal at all areas. At the base of the heart the sounds were less definite, but the impression was conveyed of intermediate, slighter sounds, probably of auricular origin, occurring between the ventricular contractions. The lungs were normal. Nervous system normal. The patient was intelligent and of a sanguine temperament. The liver was slightly enlarged and rather tender. A trace of albumin in the urine. Blood pressure: arm, 130 mm.Hg; leg, 122 mm.Hg. At a later date Dr. W. J. S. Bythell's X ray report showed evidence of much enlargement and dilatation of the whole heart. The separate movements of auricles and ventricles could not be satisfactorily demonstrated.

Progress and treatment.—On Sept. 25th the patient had a "fit" at 4 A.M. The nurse on duty stated that the pulse was absent during the fit (she had been warned to expect this feature); immediately afterwards the pulse rate was at 100. On Sept. 27th a second slight fit, not associated with loss of consciousness, occurred. The pulse was not stated to be stopped. This was the last fit which the patient had during his stay in hospital to Nov. 11th, 1913. On Sept. 29th potassium iodide, gr. 10 thrice daily, was prescribed, and this was continued till his discharge. During his stay in hospital his general condition improved. The œdema

and the albuminuria quickly cleared up. There remained, however, throughout his stay, and subsequently, dyspnœa on exertion; and there occurred, following the first allowing of the patient up, a slight return of the œdema in the legs. This again subsided with rest. From Oct. 24th to Nov. 4th tincture of digitalis, ♏ 5 t.d.s., was given. This did not

FIG. 1.

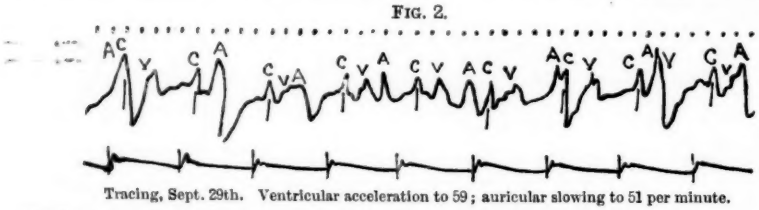


Tracing, Sept. 24th. Complete heart-block. Auricles 84 per minute; ventricles 35·2.

appear to have any influence upon the ventricular rhythm or upon the degree of block, which, as will be seen, remained complete throughout.

Polygraphic curves.—Complete heart-block was present throughout. On admission (Sept. 24th) the auricular rate was 84 and the ventricular 35·2 per minute. (Fig. 1.) Both

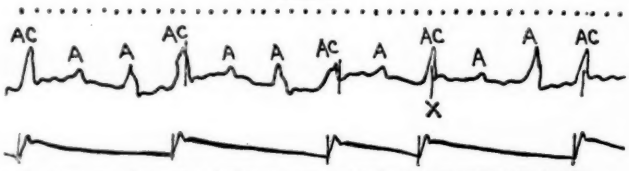
FIG. 2.



Tracing, Sept. 29th. Ventricular acceleration to 59; auricular slowing to 51 per minute.

rhythms were regular. Five days after admission, during which time the patient was not taking any drugs, the curve shown in Fig. 2 was gained. It shows that the ventricular rate had accelerated to 59 per minute, whilst the auricular rate had slowed to 51. Both rhythms continued regular. That the slow auricular rate was due to vagal influences was suggested by the fact that it was accelerated to 88 per minute after the hypodermic injection of atropine 1/60 gr. (20 minutes). This drug, however, neither on this occasion nor on any subsequent occasion had the slightest demonstrable effect in lessening the degree of A.-V. block. Whilst the atropine thus caused an auricular acceleration of 72·5 per cent., there was an associated ventricular decreased rate, a decrease of 15·7 per cent., for now the ventricular rate came down to 51 per minute. Three days afterwards (Oct. 1st) the auricular rate was at 96, the ventricular 34. The next day (Oct. 2nd) there appeared to be an exact 3-1 ratio: auricles 90, ventricles 30. Complete block, however, was still present. There was also a slight degree of ventricular arrhythmia present, although the auricular rhythm remained regular. Nor was such ventricular arrhythmia due merely to premature beats, a common finding, for it can be seen that the shortened ventricular cycles are due in nearly but not all instances to the ventricular contraction falling synchronously with an auricular contraction. (Fig. 3.) This event will be subsequently referred to. It may also be noted that the auricular beat which immediately succeeds such a synchronous contraction is smaller than that which precedes it, showing, presumably, a more forcible emptying of the auricle with the synchronous contractions. From about Oct. 10th the ventricle seemed to "settle down," as it were, to the rhythm which it maintained with but little variation during the rest of the patient's stay in hospital. Its frequency remained from 55 to 60 per minute. The auricular rate, too, maintained an average frequency of 88 per minute. The effect of vagus pressure in the neck was tried on Oct. 10th. No result followed right vagal pressure, but left vagal stimulation slowed the ventricular rate from 54 to 33 per minute. After this observation had been made 1/50 gr. atropine was injected. In 20 minutes it was found to have induced an unusually rapid auricular rate of 200 per minute. (Fig. 4.) The ventricle was not affected. No subjective symptoms were associated at any time with the vagaries of auricular and ventricular activities.

FIG. 3.



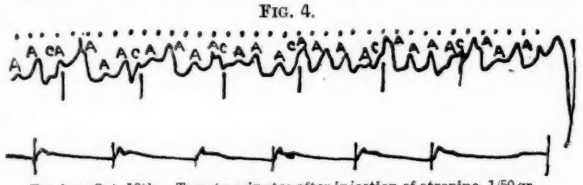
Tracing, Oct. 2nd. Ventricular rate 30; auricular 90. Complete block still present. Note that at × there occurs a ventricular beat which is premature, but which coincides with a second auricular contraction. The auricular beat which precedes the synchronous A. and V. beat is larger than that which succeeds same. Though in this strip of tracing the auricle and ventricle seem throughout to fall together, this was not so when seen over longer periods.

Some weeks after patient's discharge from hospital his doctor rang me up to say that the man had died suddenly whilst lifting some forms at a public institution, and he was good enough to forward to me the heart. The organ was large and of normal shape. There was a little atheroma around the aortic valvular orifice. In the interventricular septum, however, there was a dense, hard, yellowish thickening. This reached its maximal extent in the upper part, just in the region which the A.-V. bundle traversed. The nature was almost certainly syphilitic. The other valves and the myocardium were apparently healthy.

Remarks.

(a) *The ventricular rhythm.*—Mackenzie[9] states "there are now on record a number of cases in which the ventricular rate [in complete block] has been as high as 60." It is true that there have been several instances in which the idioventricular frequency has been stated to have been markedly accelerated for a brief period following a fit. In the case here recorded this fact was noted. And similar quickening of temporary character has been recorded by Hay and Moore,[7] Carrion,[1] probably Hoffmann,[8] also Earnshaw[12] and Laubry.[13] Two similar cases have been recorded by Dr. Byrom Bramwell in the *Edinburgh Medical Journal*, March, 1915. But in these instances such quickening has been associated with arrhythmia, and has often been due to frequently recurring ventricular extrasystoles. Again, experimental instances of increased idioventricular rate have been plentiful. Thus, Erlanger's and Blackman's experiments[4] showed

FIG. 4.



Tracing, Oct. 10th. Twenty minutes after injection of atropine, 1/50 gr. Auricular rate 200 per minute; ventricular 53. Both rhythms regular.

that during complete block there occurred paroxysms of ventricular tachycardia at frequency 141, and in one instance even at 210 per minute. Lesser degrees of acceleration were noted by them following exercise, sympathetic stimulation,

and phasic variations related to Cheyne-Stokes respiration. Cullen and Tribe[3] found in the cat inconstant acceleration following accelerator stimulation. Increased ventricular rate has followed digitalis (v. Tabora,[11] Erlanger,[5] Hare[6]). When, however, we come to clinical instances, and if we confine attention to those cases where the acceleration is due to causes other than occasional and irresponsible extrasystoles, the number of instances is at present limited. A careful perusal of the literature has resulted in the following list of cases:—

	Name.	Ventricle, rate and rhythm.	Remarks.
1.	K. F. Wenckebach.	54, regular.	Block itself due to digitalis.
2.	J. D. Windle.	66, ,,	No digitalis.
3.	J. Mackenzie.	70, ,,	Block itself due to digitalis.
4.	Meyer.	54, slightly irregular.	,, ,, ,, ,,
5.	,,	54, regular.	,, ,, ,, ,,
6.	Neuhof.	54, slightly irregular.	No digitalis.
7.	T. Lewis.	90, regular.	Complete block due to digitalis; auricles fibrillating.
8.	E. H. Hunt.	64, ,,	No digitalis.
9.	Hewlett and Barringer.	108, regular, but only brief phases.	Strophanthus poisoning. Auricular rate only 96. Shortly before death.
10.	C. E. Lea.	60, regular.	Organic block. No digitalis.
11.	,,	75, regular.	Block due to digitalis; auricles fibrillating. (Fig. 5.)

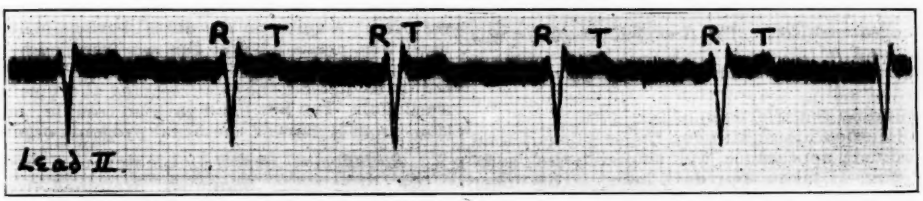
References.—1. Engelmann's Archiv. Suppl., 1906, p 58. 2. Heart, 1910, vol. ii., p. 2. 3. Brit. Med. Jour., 1911, vol. ii., p. 872. 4. Deutches Archiv für Klinische Medizin, 1911, p. 16. 5. Ibid. 6. American Journal of Medical Sciences, 1911, p. 515. 7. Heart, 1912, vol. iii., p. 279. 8. THE LANCET, May 2nd, 1913. 9. Archives of Internal Medicine, February, 1910, p. 93. 10 and 11. THE LANCET (present cases).

It will be clear from this list that the large majority of instances of high idioventricular rate are due to digitalis. That this drug can also influence the ventricular rhythm in other ways than simple acceleration has been shown in a few cases recently published,[2 8 10] in which, though the rate was not affected, the rhythm and the form of the ventricular complexes were modified. Such facts bring into relief the unusual feature in the case here reported, in which no drug influence was present.

(*b*) *The auricular rate.*—The slowing of the auricle over the brief period noted was due to sinal bradycardia. There was no sino-auricular block, as the rhythm was quite regular, and atropine caused acceleration without any modification of the rhythm. I have only been able to find two other clinical cases where, in complete block, the ventricular rate exceeded the auricular. One was Meyer's case, where digitalis had induced a 3–1 sino-auricular block, causing an auricular frequency of 18 per minute. Case 9 in above list is the second instance. The marked auricular acceleration to 200 following atropine represents, I think, the maximum effect from this drug so far recorded. These two observations suggest a high degree of vagal tone over the auricles, and possibly such tone may have been exerted upon the ventricle in this case, for it is unusual for vagal pressure in the neck to affect the ventricular rate, when there is complete block, whereas left vagal pressure here showed the ventricular rate 38 per cent.

(*c*) *Synchronous A.-V. contractions.*—Reference has been made to the tracing (Fig. 3) in which an apparent 3–1 A.-V. rhythm was due, in reality, to each ventricular contraction falling synchronously with each third auricular beat. That this was not merely an accidental relationship is shown by the fact that on more than one occasion a ventricular contraction fell exactly with a second auricular beat (as at ×, Fig. 3). Whilst this event was often noted on this day, other parts of the tracings showed an occasional typical ventricular extrasystole, and in such instances there was no relationship between such premature beat and the auricular contractions. The time interval separating the premature beat from the preceding normal contraction was exactly a second; the interval where the ventricular beat fell with the second auricular contraction was 1·2 seconds. It is, of course, possible to explain the synchronous A. and V. contractions on the basis that the ventricular contraction was also here a premature beat which happened to fall with the auricular beat, but the increased time interval which separates it from its preceding normal beat as compared to the instances of undoubted extrasystole makes one hesitate to accept this fully. As it happens, too, there is an apparent precedent for this observation in a case reported by Herrick.[14] In his case there was an exact 5–2 A.-V. ratio; ventricles 33·6, auricles 84. Here each second ventricular contraction coincided with the auricular beat. One is content here simply to place this observation on record without offering any explanation of its possible cause.

FIG. 5.



Complete heart-block with auricular fibrillation (from the Electrocardiographic Department, Ancoats Hospital). Ventricular rhythm is regular at rate 75 per minute. Patient, a man aged 78, on full doses of digitalis.

Conclusions.—1. A clinical case of complete heart-block, of organic nature, is recorded which showed: (*a*) persistent high idioventricular rate of 60; (*b*) a period of sinal slowing to 51, during which time the auricular rate exceeded the ventricular; (*c*) an unusual auricular tachycardia, following atropine, to 200 per minute; and (*d*) synchronous auricular and ventricular contractions during an apparent 3–1 block, such synchronism being maintained even when some degree of ventricular arrhythmia was present. 2. Digitalis seemed to have no effect upon the rhythm or rate. 3. Consideration of the hitherto reported cases of

high idioventricular rate, relatively few in number, shows that the great preponderance of such instances are due to digitalis, whether or not the auricles are acting normally. Even where the rate is unaffected digitalis may influence the type of ventricular complex.

References (other than those in Table).—1. Carrion, P.: Revista Clinica de Madrid, September, 1910. 2. Cohn, A. E.: Heart, 1913, vol. v., p. 13. 3. Cullen and Tribe: Journal of Physiology, 1913, vol. xlvi., p. 141. 4. Erlanger, J., and Blackman, J. R.: Heart, 1910, vol. i., p. 177. 5. Erlanger, J.: Archiv für die Gesamte Physiologie, 1909, vol. cxxvii., p. 77. 6. Hare, H. A.: Journal of American Medical Association, 1912, vol. lviii., p. 1973. 7. Hay, J., and Moore, S. A.: THE LANCET, vol. ii., 1906, p. 1271. 8. Hoffmann: Deutsches Archiv für Klinische Medizin, 1910, p. 172. 9. Mackenzie, J.: Diseases of the Heart, Oxford, 1913. 10. Oppenheim, B. S., and Williams, H. B.: Proceedings of Society of Experimental Biology and Medicine, 1913, vol. x., pp. 86-7. 11. v. Tabora: Zeitschrift für Experimentelle Pathologie und Therapie, 1906, vol. iii., p. 499. 12. Earnshaw, H. C.: American Journal of Medical Sciences, 1910, vol. cxxxix., p. 503. 13. Laubry, Esmein, et Foy: Société Médicale des Hôpitaux, Dec. 17th, 1909. 14. Herrick, W. W.: American Journal of Medical Sciences, 1910, vol. cxxxix.

Manchester.

A CASE OF WAR WOUND INFECTION BY AN ANTHRACOID BACILLUS,

THE WOUND BEING CAUSED BY A SHATTERED TRIGGER-GUARD.

BY A. W. SHEEN, M.S. LOND., F.R.C.S. ENG.,
LIEUTENANT-COLONEL, ROYAL ARMY MEDICAL CORPS (T.F.).

With Pathological Report by Temporary Lieutenant B. G. KLEIN, R.A.M.C.

THAT the routine examination of the germ infections of gunshot wounds may sometimes yield unusual results is shown by the following case. It was thought at first that the infection was by the anthrax bacillus, but more detailed investigation showed that the organism was of the variety known as anthracoid. The mode of infliction of the wound—by a shattered trigger-guard—is also of interest.

Private A. G——, aged 24 years, was wounded by a bullet on Dec. 15th, 1914, at 8.15 A.M., in the palm of the left hand and in the right index finger. He estimates the range at about 30 yards. When wounded he was advancing across a turnip field with a clay soil and was holding his rifle, prepared to fire. Both hands were wounded at the same time. He dropped the rifle at once and does not know to what extent, if any, it was damaged. Because of heavy fire he lay out after being shot for about ten hours and then crawled back to his trench, getting the wounds all smeared with soil. The first field dressing was applied, and he proceeded to the base, his wounds being cleaned and dressed (apparently painted with tincture of iodine) several times. He was admitted to hospital on the afternoon of Dec. 17th.

On admission his right index finger presented an extraordinary appearance, well shown in the photograph (Fig. 1) taken four days later. The finger was stiff, nearly extended, and very much swollen round its centre, with over the dorsal surface of its middle part a protuberant ulcer, the base of which was partly covered by an adherent black slough, and partly glazed pink, with adherent fragments of grey slough and of lymph. The swelling was hard and not tender. When the photograph was taken most of the black slough had come off. Proximal to the ulcer was a "gutter" wound in the line of the finger as if the bullet had passed there. On the back of the hand were a number of linear black scabs of varying lengths suggesting small superficial wounds. The whole hand was slightly swollen. Above the wrist the limb was normal. There were the entrance and exit wounds of a bullet through the palm of the left hand. The temperature was normal and continued so, and there was no constitutional disturbance throughout.

The X ray appearances are shown by the photograph (Fig. 2). The proximal phalanx is fractured. It seems as if the bullet, after passing through the palm of the left hand, hit the trigger-guard and pulverised it, the tiny fragments being carried into the right index finger behind the trigger-guard.

FIG. 1. FIG. 2.

Under boric fomentations and hot iodine baths the swelling subsided, healing took place rapidly, and the use of the finger was to a large extent restored. A sinus on the dorsal surface, where the ulcer was, persisted, and this was scraped by Lieutenant J. S. Rowlands on March 29th, and subsequently healed, the man leaving the hospital on April 20th. The left hand gave no trouble; cultivations from it showed the usual pyogenic organisms.

Pathological Report by Lieutenant KLEIN.

Dec. 19th, 1914: Scrapings examined from the necrotic area on the back of the forefinger of the right hand. (*a*) Smears direct from the material showed, in addition to a very large number of streptococci, some thick straight bacilli, staining by Gram. These occurred separately, in pairs, and in short chains. The ends were nearly square. The length varied, being greatest in the single forms, in which it measured more than the diameter of a blood disc. The thickness of the rods varied from one-third to one-quarter of the length. No sporing forms were seen. (*b*) Cultures. Anaerobic culture in milk yielded no result (heated to 80° C. for 15 minutes after inoculation). Aerobic culture at 37° C. in 24 hours showed, in addition to streptococci and B. coli, a few opaque white colonies, partially confluent, of irregular outline and

granular appearance. The edge of such a colony, and of similar colonies in subculture, showed an arrangement similar to that of the anthrax colony.

Microscopical examination showed cylindrical rods, with sharply defined ends (not, perhaps, quite so square cut as the typical anthrax bacillus), Gram-positive, and spore-bearing, the spore being central or nearly central. The bacilli were arranged in long chains. In the agar culture most of the bacilli appeared to be non-motile, but a certain number showed movement. In bouillon at 37° C. an abundant growth occurred in 24 hours. A certain amount of filmy growth was present in the supernatant fluid, but the bulk of the resulting mass fell and formed thick white flocculi at the bottom. The bacilli occurred here also in chains. In the 24 hours' culture they were distinctly motile.

Gelatine surface culture at 20° C. showed pin-point colonies in 24 hours; liquefaction in three days. Gelatine stab culture at 20° C. (using 7½ per cent. gelatine) produced a typical spiking growth similar to that of the anthrax bacillus. The surface growth on blood serum was similar to the stroke culture on agar, the edge of the growth showing the same furry appearance. No liquefaction of the medium occurred.

Dr. F. W. Andrewes, of St. Bartholomew's Hospital, kindly examined a culture of this bacillus and inoculated a mouse with it. He reported that the bacillus was motile and therefore could not be the anthrax bacillus. The mouse inoculated with 1 c.c. of a 24 hours' broth culture under the skin of the back died in 24 hours. In the dead mouse the chief difference from anthrax was that the intestines were distended with turbid fluid, while the spleen was enlarged and dark, and a film from it showed fairly numerous bacilli like anthrax, but the majority of them were quite actively motile.

The bacillus above described, therefore, although resembling the anthrax bacillus in some particulars, is not identical with it. It belongs, in all probability, to a class of organisms which have been described and termed "anthracoid"; one at least has been found which has some degree of virulence. Bainbridge has described such an organism as B. anthracoides. Dr. Andrewes has cultivated such a bacillus from horsehair.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

STOMACH *V.* HEART IN RELATION TO PRÆCORDIAL PAIN AND SUDDEN DEATH.

BY C. J. SORTAIN HANCOCK, M.D. DURH., M.R.C.S., &c.

IN connexion with the letters which have recently appeared in your columns on the above subject, the following case may be of interest.

A man, aged 60 years and looking much younger, recently sought advice for attacks of angina. The nature of the attacks is as follows. After any severe exertion, such as walking up hill, or if any ordinary walk is taken directly after food, severe pain commences in the upper part of the thorax, spreading to the neck, shoulders, and down both arms; it rapidly increases until it is impossible for him to move. The moment, however, he stops still the pain quickly begins to pass away, the duration of it being only from 30 to 60 seconds. If he starts walking again directly the pain returns, but after a short time he is able to walk slowly without pain. If the stomach is empty he can do ordinary walking as well as any man of his age. These attacks have occurred for the last two years with the same characteristics.

The previous history of his case which has a direct bearing on it dates from 1880, when, living in India, he suffered frequently from intermittent fever and also had severe attacks of acute gastritis, which continued in spite of treatment until he took change of air on the Brahmapootra. Then all the stomach symptoms disappeared in 24 hours, and he was able to resume his ordinary diet. He led an open-air life, and was in the saddle practically all day long. He spent in all 25 years on the plains of India, with only two holidays of ten months each. In 1885 he had broncho-pneumonia which laid him up for nearly three months and left him with a damaged lung and severe daily attacks of asthma. After these had lasted for 2½ years the paroxysms, in the middle of a hot rainy season began gradually to subside, and in a few weeks ceased, and he has never had any since.

The anginal pains came on two years ago, as above described, and do not appear to have varied in character. He has always been a total abstainer from spirits and has never had syphilis. The gastric symptoms also recurred, and he is now liable to periodic attacks of acute dyspepsia, any food at first causing severe pain, but this phase passes off and the hunger syndrome ensues. In addition to this he has occasional slight glycosuria. The heart on physical and X ray examination presents no abnormal signs whatever, and the aorta appears normal. The arteries show no signs of sclerosis. Blood pressure: 124 systolic; 80 diastolic.

For this case it would appear that if the hypersensitive segmentary centres are in any way responsible for the attacks they must occupy a secondary, not a primary place—for no surface pains or points of tenderness on the chest wall are complained of during the attacks, and no relief is afforded by eructation of gas, although the attacks seem to be in the large majority of instances secondary to gastric disturbance. At the same time it must be remembered that the lung trouble he complained of in 1885 resulted in frequent attacks of asthma which persisted over a space of 2½ years and then suddenly left and have never returned. I would therefore suggest that if the angina is in any way connected with the "spinal segments" the connexion is of a reflex rather than of a direct character.

Leytonstone, N.E.

POISONING BY "SPIRITS OF SALTS."

BY H. FAIRFAX, L.M.S.S.A. LOND.

I REPORT this case, although it occurred in my practice nearly five years ago, because circumstances have made it topical.

On the morning of August 31st, 1910, I was called to see a patient, and was told by his wife that he had taken about two ounces of spirits of salts. I found that he had swallowed nearly two ounces of "partially killed spirits of salts" with suicidal intent. The whole of the inside of the mouth and throat as far as one could see was corroded and discoloured by the action of the acid. I administered bicarbonate of soda in milk and water and ordered the patient to take as much milk and water, with a pinch of the powder in it, as often as he could be induced to take it. Sickness and diarrhœa continued the whole day. On the next day I gave a mixture of tr. chlorof. et morph. and liq. bismuthi to quiet the stomach and stop the diarrhœa, raw eggs and milk being the food ordered. The patient's condition improved considerably.

On Sept. 7th I removed with the forceps a traumatic diphtheritic membrane from the uvula and palate, which was considerably interfering with the breathing. Had I not known the history of the case and only seen the patient for the first time on this occasion I should have had no hesitation in stating that it was a very bad case of diphtheria. I took some of the membrane to Dr. John Biernacki, the medical superintendent of the Plaistow Fever Hospital, who said it looked like an ordinary case of diphtheria until I gave him the history of the case. He kindly had the specimen examined for me with negative results. An ordinary gargle of biborate of soda removed the false membrane and the mouth was quite clear and in its normal condition by the tenth day. The patient was decidedly better, but was complaining of intense pain all over the region of the stomach, with a sensation of choking and suffocation. The temperature and pulse were normal. Four days later (Sept. 11th) he felt sick and said he had a lump coming up in his throat, and he thrust his fingers as far down as he could to bring it up. What he brought up frightened him. This vomit appeared to me from its shape to be a complete cast of the whole of the œsophagus and stomach. After floating it out in water and examining it, I told his wife to save it and place it in a small glass jar. She unfortunately let the basin fall on the floor and smashed it, but gathered it up as well as she could, and I have placed it in spirit. On the next day vomiting again set in, the vomit being mixed with bright arterial blood. Iced milk, sugar dissolved in cold water, and minim doses of dilute liq. ferri perchlor. were given three or four times daily. The patient had very little sickness subsequently, and seemed to be in a fair way toward recovery. His diet was restricted to milk and oatmeal flour, with other like soft and pulpy foods.

On Oct. 5th the patient walked to the surgery for the first time since taking the acid, and stated that he was feeling quite himself again, and that he hoped shortly to resume his ordinary work. He asked if he might have a little more substantial food. I gave him permission and told him to be very restricted in his diet. On the 7th he called again, stating that he had had a relapse and was vomiting everything he took in the shape of food. He also informed me that he had taken a mutton chop, greens, and potatoes. I examined the urine; its specific gravity was 1035 and it was acid in reaction, no sugar or albumin being present. The heart sounds were normal and the pulse-rate was 84 and regular in force and rhythm. There was hyperresonance over the upper part of the left lung.

The patient expressed a desire to go to a hospital and see if anything further could be done for him. He was admitted to Charing Cross Hospital, an operation was performed on Nov. 2nd, and he unfortunately died from shock.

Plaistow, E.

A NOTE ON PLAGUE BACILLI IN AN UNUSUAL SITUATION IN THE BODY.

BY J. H. SHELDON, M.B. LOND., &C.,
DISTRICT MEDICAL OFFICER, BURMA RAILWAYS, INSEIN, BURMA.

AT 8.30 A.M. on Nov. 29th, 1913, I received information that an adult Burman male was in a dying condition, after an illness of 36 hours only, and that during the past hour convulsions and head retraction had been present. The sub-assistant surgeon was sent to see the man, and instructed to obtain slides of the cerebro-spinal fluid in addition to those of the blood, as it seemed possible that the case might be one of epidemic cerebro-spinal meningitis. He arrived at 9 A.M. to find the patient dead. A superficial examination of the body failed to discover any bubo or other gross lesion.

Specimens of peripheral blood were stained with gentian-violet and of the cerebro-spinal fluid with carbol-fuchsin, and examination of the slides revealed the presence of typical plague bacilli in small numbers; the slides of the cerebro-spinal fluid simply swarmed with them.

I have to thank the chief medical officer of the Burma Railways for his permission to publish the case.

Insein, Burma.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OPHTHALMOLOGY.

Exhibition of Cases.—Retinitis of Pregnancy.

A MEETING of this section was held on June 9th, Mr. PRIESTLEY SMITH, the President, being in the chair.

The following cases were shown:—

Mr. A. C. HUDSON: A case of Sympathetic Ophthalmitis treated by salvarsan and neosalvarsan. It was regarded as an undoubted case of the condition, and seemed a genuine cure.

Mr. J. S. HOSFORD: Two cases of the Albuminuric Retinitis of Pregnancy.

Mr. C. N. ATLEE: Coloboma of the Iris in mother and child.

Mr. CHARLES WRAY: Bony Growth in the Frontal Sinus. In cases of retrobulbar neuritis suspected to be of sphenoidal origin, he advocated making the patient spend some time with the face downwards, with a view to facilitating drainage from the sphenoidal and posterior ethmoidal cells.—Mr. W. T. HOLMES SPICER discussed the case.

Mr. J. HERBERT FISHER read a paper on Retinitis of Pregnancy. He had not included in the title the term "albuminuric," as he wished to lead his hearers away from the idea that the acute retinal changes were the results of the kidney disorder. Obstetricians now no longer explained the albuminuria of pregnancy as the result of obscure reflex effects of the gravid uterus upon the kidneys, or by mechanical pressure on the ureters. They attributed it, with eclampsia and pathological vomiting of pregnancy, to toxæmic products in the circulation. Eclampsia could not be predicated by any examination of the urine; the effects were especially seen in the quality of the blood and in the blood-vessel walls. In fatal cases of eclampsia, hæmorrhages of brain and necrotic changes in the liver were often found, and albuminuria was an effect of the disease on the kidney, not the cause. In the retinitis of pregnancy the condition of retina was different from that in albuminuric retinitis, as also was its sequel. Syncytiotoxins—products of the disintegration of the syncytium cells—had been found in these cases, and these cells immediately connected the fœtal with the maternal structures. Mr. Fisher proceeded to give particulars of a series of typical cases of the condition which had been under his care. In one fatal case Mr. A. C. Hudson made a pathological examination on the day after death, and found the coats of the eye *in situ*. There was some œdema of the nerve head, and in the nasal quadrant of the retina were two large hæmorrhages. The microscope showed the sclera and nerve sheaths to be normal, the chief pathological changes being in the large choroidal arteries, many of which showed gross endarteritis, causing in some instances obliteration of the vessel lumen. Some of the choroidal arteries were normal. Similar pathological changes were found in sections of posterior ciliary arteries surrounding the optic nerve behind the eyeball. Bruch's membrane was everywhere intact and the retinal pigment normal. The retina and optic nerve head showed evidence

of œdema, in the former almost limited to the internuclear layer. Rods and cones were almost entirely absent, but this may be attributable to post-mortem changes. In the large retinal veins there was pronounced thickening of the adventitial coat. He had found it difficult to group his cases. The rule had been for good recovery of vision to ensue, with the disappearance of all acute manifestations in the retina, thus differing absolutely from cases of ordinary renal retinitis. In cases in which defects of vision were permanent, this seemed to have been because changes had been produced in the walls of the arteries or an atrophic condition of the nerve. A recurrence of the retinitis was not necessarily seen when subsequent pregnancies occurred, even though the albumin did not quite disappear in all. One of his patients died after an interval of six years from cardiac failure; another after eight and a half years from cerebral hæmorrhage into the left corpus striatum. In this case the kidneys were found to be of the typical red granular type. It seemed clear from his cases that albuminuria of pregnancy was not sufficient alone to set up the typical retinitis of pregnancy.—In the ensuing discussion Mr. HOSFORD, speaking of retinitis, reported having carefully observed 16 cases during the last 15 years; only three of those patients were now alive. All but two ultimately developed a star-shaped spot on the macula, a sign which he regarded as of fatal omen. Many patients seemed quite to recover from the initial attack; a relapse occurred later. In a series of 132 cases in Dr. S. Fenwick's wards 81 were in females, 51 in males; the onset among single men and single women seemed to be about equal. Much of the renal trouble seen fairly late in life might have started, in females, in pregnancy. Only 3 of the 132 cases had myopic eyes. Since the Wassermann reaction was introduced he had had all the cases he saw tested, but none was syphilitic.—Mr. W. C. ROCKLIFFE related a case in which retinitis occurred in the first pregnancy, but the defect of sight seemed to be quite recovered from after premature labour was induced. A subsequent pregnancy brought on a repetition, but though labour was again ended prematurely, sight became progressively worse and ended in blindness. The patient died four years later from heart failure.—Mr. J. B. LAWFORD alluded to the far-reaching effect of the toxæmia. In some of his cases, although there was no recrudescence of retinal change during subsequent pregnancies, toxic effects showed themselves at a later date and eventuated fatally. It was a common belief that one of the safeguards in this condition was the avoidance of further pregnancies in the patient. In one case which he had under care over 20 years ago the lady developed retinitis in her first pregnancy, and had great defect of sight. This disappeared after delivery, and, acting on the advice of her medical attendant and himself, she had no further pregnancies. Her sight remained good for a number of years, but ultimately she developed advanced changes in the retinal vessels, and succumbed to chronic nephritis. Another patient, older, developed the condition in her third pregnancy, and recovered. The advice to bear no more children was disregarded, and in her next pregnancy there was a great aggravation of her toxæmic condition, and she died from nephritis. He asked whether obstetricians were aware of the reason for the persistence of the toxic effects of the first attack, even though some subsequent pregnancies did not seem to be accompanied by the symptoms. There seemed to be need for a revision of the view as to the comparative innocuousness of the retinitis of pregnancy.—Mr. LESLIE PATON regarded the paper as important in that it gave a broad view of a disease not apparently due to a microbial poison, but to a cytotoxin; and he tentatively suggested that such conditions as the irido-cyclitis seen in women at the period of the climacteric would possibly be brought into the same category. The seriousness of the disease seemed to be directly proportional to the extent to which the vessels were injured at the time of the attack. One case, though presenting "silver-wire" arteries, remained still well eight years after the attack. He was much interested in the statement of Mr. Fisher that subsequent pregnancies need not necessarily cause a recurrence of the retinitis, for it touched a matter on which advice was frequently asked.—Mr. FISHER replied, suggesting combined investigation by obstetricians and ophthalmologists concerning the diseases attributable to the toxæmia present in pregnancy.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF SURGERY.

Exhibition of Cases.—Bridge Method of Skin Grafting.

A MEETING of this section was held on May 14th, Dr. F. CONWAY DWYER, the President, being in the chair.

Mr. D. KENNEDY showed a girl who, some nine or ten months ago, injured her elbow by a fall. Since then there was complete ankylosis. When first seen about a month ago, X ray examination showed that the humerus was not normal, but somewhat battered. It was decided to perform an arthroplasty or whatever treatment was suggested by the condition found. A projection was found on the inner side of the articular end of the humerus. The projection was removed off the ulnar aspect of the humerus and the end of the humerus was put level. A flap was then taken partly from the lateral aspect of the arm, and almost entirely consisting of fat, and turned over the humerus, leaving the ulna and radius as they were.—The PRESIDENT and Mr. H. DE L. CRAWFORD discussed the case, and Mr. KENNEDY replied.

Mr. H. DE L. CRAWFORD showed photographs of four cases of Congenital Syphilis of the Hands and Feet. The skiagrams were brought forward, as congenital syphilis of the hands and feet was considered a rather rare condition. The first was in a boy, aged 11 years, with a very large swelling on the outside of the left foot and a good deal of thickening in the soft parts. The patient had well-marked Hutchinson's teeth. When the photographs were taken the condition had spread to the proximal phalanx of the big toe. The X rays pointed to the condition being gummata underneath the bone. He suggested that what appeared to be small sinuses were really pieces of dead bone. Under continued treatment with mercury and iodide of potassium the gummata healed up. The second case was that of a boy who had also well-marked Hutchinson's teeth. The patient was the only living child in the family, and there was a history of six miscarriages. The thumb was very swollen, and the phalanges showed small areas of rarefaction. There was no pain, so the condition was not looked upon as tuberculous. There was no sign of ordinary or syphilitic rickets. The third case was that of a baby, aged 1½ years. The child was an adopted one, and no definite family history was forthcoming. There was much metacarpal thickening. The child had a typical syphilitic forehead, and the absence of increased heat, tenderness, or pain made it positive that the case was not one of tuberculosis. The fourth case was that of a child with swollen ring finger on the left hand. Amputation of the finger was advised. On cutting down to the periosteum the extensor was found to be involved, and a soft, gritty substance, apparently new bone, was seen. The wound healed. A week later there was slight enlargement of the other hand. The case was considered syphilitic. Family history was bad, showing three previous miscarriages. This condition, he said, appeared to be more common than was expected, and he had decided in future not to label any of these cases as tuberculous until they had been well examined.

Mr. CRAWFORD also showed skiagrams of old Traumatic Dislocation of the Hip in a child aged 9.—The PRESIDENT said that the point raised in connexion with these cases was of much importance, as they were all likely to diagnose them as tuberculous instead of syphilitic.

Mr. CRAWFORD afterwards read a paper on the Bridge Method of Skin Grafting. After describing the technique in detail, he emphasised the following points: (1) That asepsis must be perfect; (2) that the size of the graft must be as small as possible, and that it was better to operate twice than use a very big graft; and (3) that the graft and limb must be very carefully immobilised during the first week. (The paper was illustrated by lantern slides.)—The PRESIDENT expressed the indebtedness of the section to Mr. Crawford for bringing forward this effective method of treatment. This method of grafting, which left the graft on the exposed raw surface, evidently yielded good results. He considered the technique described one that ought to be followed.—Mr. KENNEDY considered the Bridge method

a most ingenious one, and if the difficulty of covering a large area could be overcome he would be glad to hear how it could be done.—Mr. M'CONNELL said he had treated one case by this method—viz., a very extensive formation of scar tissue on the thumb. The result pleased him very much, and the patient had very good abduction in the thumb afterwards. Skin grafting seemed to be absolutely different in the hand from elsewhere, as in other parts a good blood-supply was to be had, whereas the supply in the hands was bad. In all cases of grafting about the hands and feet he looked upon the Bridge method as the only one. He suggested that all methods might be used in their proper places.—Mr. CRAWFORD, replying to the remarks, said that the method which should be used entirely depended upon the site on which the graft was to grow.

SECTION OF MEDICINE.

Exhibition of a Case of Leprosy.—The Use of Vaccines in the Treatment of Respiratory Diseases.

A MEETING of this section was held on May 21st, Sir JOHN W. MOORE being in the chair.

Dr. C. M. O'BRIEN showed a patient suffering from Leprosy of the tuberculated form. The patient was a retired soldier who had offered himself for service, but was refused on account of a rash on his skin. He had served in the Leinster Regiment in Malta, Bermuda, Halifax, Jamaica, and South Africa. He had had colic in Malta and gonorrhœa in the year 1898, but had never had syphilis. He left the army in 1906 apparently perfectly well and had worked as a farm labourer. In 1913 he was in hospital for five months with boils on the face and neck. The disease was first diagnosed in August, 1914. The face as a whole was unusually broad, the chin being prominent; the skin on the forehead lumpy and shiny; the nose flattened; the lips thick; hair, other than on scalp, falling out; the hands swollen and cushion-like on back, ash-grey in colour; thenar and hypothenar muscles flat and flabby; inguinal glands shotty; reflexes normal; no anæsthesia. Mucous membranes free. No reaction with alt-tuberculin injected subcutaneously nor by von Pirquet's method. Positive Wassermann reaction. Sections from a nodule, prepared by Mr. T. T. O'Farrell, were exhibited showing the bacilli in numbers; a few in cells, the majority extra-cellular. Dr. O'Brien gave an interesting résumé of the history of leprosy, and dealt especially with recent investigations into its bacteriology and transmissibility.—Sir JOHN MOORE, Dr. H. C. DRURY (who reminded the meeting that such names as Lazarus Hill and Leopardstown, marking leprosy stations, showed the former presence of the disease in Ireland), Professor METTAM, Dr. W. M. CROFTON, and Dr. F. C. PURSER also spoke.

Dr. ROBERT J. ROWLETTE read a paper on the Use of Vaccines in the Treatment of Respiratory Diseases, which will appear in THE LANCET.

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN (UNIVERSITY OF LONDON).—The Queen has announced her intention of attending the special matinée at the Palace Theatre on June 29th, at 2.30 P.M., when the proceeds will go to the London School of Medicine for Women.—The presentation of prizes will take place on Thursday next, June 24th, at 4 P.M., by Her Royal Highness Princess Alexander of Teck, when academic dress will be worn. Intending guests should communicate with the secretary, 8, Hunter-street, Brunswick-square, London, W.C. The company is asked to assemble at 3.45 P.M., after which time admittance will be only to the garden by the entrance in Handel-street.

GLASGOW CORPORATION AND THE TREATMENT OF PHTHISIS.—The Glasgow Corporation have under discussion a proposal to convert the tramway depôt at Ibrox into a temporary hospital for the treatment of tuberculosis. The scheme, which will involve an expenditure of £8000, provides for the accommodation of 240 patients, many of whom have had to be removed from other institutions taken over by the military authorities. The proposal has met with strong disapproval from the inhabitants of the district and from the Govan school authorities on the grounds that the health of the children will be jeopardised.

Reviews and Notices of Books.

The Dispensary Treatment of Pulmonary Tuberculosis.

By HILDA CLARK, M.B., B.S. Lond., late Honorary Medical Officer, Street Tuberculin Dispensary, and Tuberculosis Medical Officer to the County Borough of Portsmouth. London: Baillière, Tindall, and Cox. 1915. Pp. 279. Price 15*s*.

IN this volume Dr. Hilda Clark describes in detail a complete series of cases for whose examination and treatment she was responsible for the three years from June, 1910, to June, 1913. She explains that the investigation was carried out with three main objects in view. 1. To estimate the value of tuberculin treatment by two consecutive series of cases. 2. To estimate the position of tuberculin treatment in a scheme designed to deal with the special problem of tuberculosis in the working classes. 3. To estimate the incidence, course, and response to treatment of tuberculosis in the population of Street, a manufacturing village in Somerset, where peculiar opportunity offered for such an investigation.

It is in regard to the first two of the above propositions that the chief general interest arises. Dr. Clark has evidently expended a vast amount of time and care in the investigation of the cases and the collection of results, but owing to three main reasons, in our opinion, she fails to establish the fact that tuberculin is such a valuable therapeutic preparation as has been claimed by some observers. In the first place the classification she has adopted of the various types of cases is so involved that it is difficult to follow. Secondly, she has not contrasted her results with those obtained by other means of treatment. Thirdly, the time during which the patients were under observation was too short to enable a reliable opinion to be formed as to the permanency or otherwise of the arrest of the disease. On the other hand, however, the careful description of a large number of cases tends to show that with due care in the administration of the remedy harmful sequelæ rarely occur.

Needless to say, the best results were obtained in those cases in which tubercle bacilli were not found, and in connexion with this fact it is interesting to note the statement that the discovery of the tubercle bacillus in the sputum is considered by Dr. Clark to be the only certain proof that the lungs are infected; with this view the large majority of physicians who have had an extended experience in connexion with the disease will be cordially in accord. We also commend the opinion that the occurrence of either a general or a needle-track reaction after the subcutaneous injection of tuberculin indicates that infection of some part of the body has occurred at some period. But if a focal reaction can be detected it is considered that active mischief must be present at the spot where it was observed. These views are perfectly in accord with modern research.

In discussing the value of tuberculin as a remedial agent, Dr. Clark is not convincing. Her words cannot be considered to carry much weight when she says: "In studying the cases ..... with a view to obtaining evidence as to the action of tuberculin the first general impression must certainly be that the remedy has been of use," and the subsequent remarks by no means add force to this statement.

We do not wish to intimate that we consider that the administration of tuberculin is useless, but merely to express our opinion that the series of cases recorded in this volume have not proved that tuberculin is superior to the other methods of treatment of pulmonary tuberculosis which are now being employed.

A Text-book of Practical Therapeutics.

By HOBART AMORY HARE, M.D., B.Sc., Professor of Therapeutics, Materia Medica, and Diagnosis in the Jefferson Medical College of Philadelphia; Physician to the Jefferson Medical College Hospital. Fifteenth edition. London: Henry Kimpton. 1914. Pp. 998. Price 21*s.*

THE fact that 15 large editions and many reprintings have been called for since this book first appeared in 1890 leaves little room for question that the author's effort to write a trustworthy and useful text-book on therapeutics has proved successful. Dr. Hare points out that the present time is an era of therapeutic rationalism, when remedies are given, not because they are recommended or their value is proclaimed by some authority, but because their use appeals to the medical practitioner who has a knowledge of the physiological, pathological, and therapeutic problems to be faced, and therefore judges for himself what remedy is best suited to a given case. Dr. Hare has therefore studied how best to give an account of remedial measures for disease and their employment upon a rational basis.

As in previous editions the work is divided into four parts. The first deals with introductory matters, the second with the action of drugs, the third with remedial measures other than drugs, and the fourth with the treatment of individual diseases, whereby the employment of the remedies discussed in the earlier part of the book is directly applied, as at the bedside.

The book has been brought thoroughly up to date, and certain articles have been added or rewritten. In the discussion of the use of tuberculin as a remedial agent preference is given to the method of employing infinitesimal doses, so that no febrile reaction is produced. A good account is given of the therapeutics of salvarsan, and the modes of its administration are clearly described.

The book continues to be found a most useful one for reference; its vast amount of valuable information is steadily sifted and increased by recurring issues.

A Laboratory Manual and Text-book of Embryology.

By CHARLES WILLIAM PRENTISS, A.M., Ph.D., Professor of Microscopic Anatomy in the Northwestern University Medical School, Chicago. With 368 illustrations (many in colours). London and Philadelphia: W. B. Saunders Company. 1915. Pp. 400. Price 17*s.* net.

IF this text-book represents the actual course on this subject given in the Northwestern University Medical School of Chicago, then it is evident the medical students of that University obtain a fuller and more practical course on this subject than falls to the fortune of our students at home. It represents an attempt to combine descriptions of vertebrate embryos which are studied in the laboratory with an account of human embryology especially adapted to the medical student. The emphasis in this sentence is clearly on the word laboratory as opposed to mere descriptive lectures or demonstrations. The author appeals for a greater attention to the study of embryology because it affords a comprehensive understanding of gross anatomy of the adult, and also because it explains the occurrence of many anomalies as well as certain pathological changes in the tissues. We quite agree with him, but in a medical course already overburdened with various subjects our wonder is how the average medical student can find time to carry out the many manipulations required for the dissection of pig embryos which are so carefully described and well illustrated in the text. The chapters on human organogenesis are partly based on Keibel and Mall's "Human Embryology."

The following is the arrangement of the subject matter: the germ cell, segmentation and formation of the germ layers, study of chick embryos, fœtal membranes and early human embryos, pig embryos and methods of dissecting them, the development of face, palate, tongue, salivary glands, entodermal canal and its derivatives, urogenital and vascular systems, histogenesis, morphogenesis of the central and peripheral nervous system.

A list of about a dozen of the newer principal text-books is given for reference. The illustrations are numerous, bold, clear, and well printed. Some are borrowed and their sources duly acknowledged. Careful descriptions are given of the various sections of embryos which are inserted in the text, and rather full descriptions of them necessarily occupy a considerable part of the text itself. Moreover, the magnification is carefully stated. Some of the illustrations are more or less semi-diagrammatic "reconstructions" of embryos in various stages of development. A very readable account is given of early human embryos and their membranes. About 70 pages are devoted to the study of pig embryos and their organs.

This is a lucid, comprehensive, and yet not too extensive text-book, which we cordially recommend as an attractive, practical, and succinct presentation of the main facts of vertebrate embryology. The illustrations are admirably drawn and really instructive.

LIBRARY TABLE.

An Ethical Problem, or Sidelights upon Scientific Experimentation on Man and Animals. By ALBERT LEFFINGWELL, M.D. New York: C. P. Farrell. 1915. Pp. 369.—The purpose of this book is set forth in the preface as follows: "An ethical problem exists. It concerns not the prevention of all experimentation upon animals, but rather the abolition of its cruelty, its secrecy, its abuse." In a postscript to the preface the author goes out of his way to comment on the horror of the present great struggle between the nations, and expresses the hope that "the insolence which deems the promise of a nation to be no better than a 'scrap of paper' shall meet its due recompense." As he has dragged in the war, we may be permitted to call attention to the fact that speaking in the Reichstag on May 28th the German Chancellor, Dr. von Bethmann-Hollweg, referring to Italy's joining the Allies, had the effrontery to say: "Italian statesmen have no right to measure the trustworthiness of other nations in the same proportion as they measured their own loyalty to a treaty. Germany by her word guaranteed that the concessions would be carried through. There was no occasion for distrust." The application of this parable will be found in the following words taken from Chapter XV. of the book before us

entitled "Unfair Methods of Controversy": "One phase of the vivisection controversy is of singular significance. It is the peculiar tendency to unfairness which the advocates of unrestricted experimentation seem to display in every discussion regarding the practice; ..... it would seem to be impossible for anyone writing in advocacy of unlimited and unrestricted vivisection to state fairly the views to which he is opposed." Considering the repeated and continuous career of demonstrated misstatement and falsehood that has throughout characterised the crusade against scientific research, of which notable examples were given in Dr. W. W. Keen's book reviewed in these columns recently, this is quite in Bethmann-Hollweg's vein.

The Arcana of Freemasonry. By ALBERT CHURCHWARD, M.D. Brux., M.R.C.P. Edin. London George Allen and Unwin. 1915. Price 7*s.* 6*d.* net. Pp. 326.—This book is dedicated by the author to "all my brother Masons, of whatever clime and whatever creed, who take an interest in Masonic research," and is made up of a series of lectures, some of which have already appeared in the *Freemason*. This being so, the general reader will find the book somewhat recondite, but some of the chapters will appeal to those who take an interest in ritual and symbolism. Thus, Chapter IV. deals with the Divine Name, Chapter IX. with the origin and explanation of some Masonic signs and symbols, and Chapter X. with Egyptology and Masonry. (Masonry, according to Dr. Churchward, has its root in Egypt.) Chapter XII., the Operative Masons, discusses the various symbols and figures upon which the ground-plans of temples and other buildings were founded, an interesting subject, which is treated in a manner more suited to the general reader by Lethaby in his book, "Architecture, Mysticism, and Myth." We have read Dr. Churchward's book with interest, and perhaps the best comment upon it is the phrase of that learned member of our own profession, Sir Thomas Browne, who surely would recognise Dr. Churchward as a kindred spirit: "All things began in Order, so shall they end, and so shall they begin again, according to the Ordainer of Order and Mystical Mathematicks of the City of Heaven."

Index Catalogue of the Library of the Surgeon-General's Office, U.S. Army. Authors and Subjects. Second Series, Vol. XIX. U—Uzielli. Washington: Government Printing Office. 1914. Pp. 674. Price $2.—The present volume of this storehouse of all the literature of medicine—not of books only, but of pamphlets and individual articles in the medical press of the world—opens with six pages of additional abbreviations for the titles of medical periodicals to which reference is made. Among the important headings which embrace references to a wide area of literature are: United States (70 pages), Unna (4¾ pages), Urethra (41 pages), Urinary and Urine (105½ pages), and Uterus (232 pages). As a reference work to the medical literature, ancient and modern, of the entire world this laborious compilation stands unequalled.

MISCELLANEOUS VOLUMES.

UNDER the title of *Leper Houses and Mediæval Hospitals* (London: H. K. Lewis. Pp. 47. Price 1*s.* net) has been issued a reprint of the FitzPatrick lectures delivered by Dr. CHARLES A. MERCIER before the Royal College of Physicians of London on Nov. 5th and 10th, 1914, a full abstract of which appeared in our columns on Jan. 2nd and 9th, 1915. The first lecture is devoted to a historical survey of leprosy up to the middle of the seventeenth century, by which time it had practically disappeared from Europe, and Dr. Mercier concludes by suggesting that tuberculosis as at present existing is a modified form of the ancient and mediæval leprosy: "I venture to put forward the hypothesis that the bacillus of leprosy has changed in the course of time into the tubercular bacillus." The second lecture mainly deals with the constitution and management of leper and other hospitals. Our forefathers were generous in many ways to "Christ's poor," but they were also thrifty. Thus Henry IV. confirmed to the hospital of St. Giles, near Maldon, in Essex, that the master thereof was to have towards the maintenance of the leprous burghers of the said town the forfeitures of bread, ale, and fish that was not good. Some years before Henry IV.—i.e., in 1384—the Parliament of Scone had provided that "gif ony man bring to the merkit corrupt swine or salmond to be sauld they sall be taken by the bailies and inconteinent without any question at all sall be sent to the lipperfolke, and gif ther be no lipperfolke they sall be destroyed uterlie." Dr. Mercier's lectures naturally give only an outline of the important subject with which he deals. Mediæval hospitals were so bound up with mediæval life that their history, foundation, life, decline, and fall form a very large matter for treatment. Any reader of Dr. Mercier's lectures who may desire to go further into the matter will find in Miss Mary Clay's "The Mediæval Hospitals of England" an excellent book dealing with a general view of the subject, and a copious bibliography containing references to many books and papers dealing with details.

Two new volumes have been added to the "Pocket-Guide Series," published at 1*s.* each by The Scientific Press. The first is *The Muscular System*, by HAROLD BURROWS, M.B., B.S. Lond., F.R.C.S. Eng., in which the most important features of the anatomy of the skeletal muscles with their functions and nerve supplies are summarised. The second is *Notes on the Nervous System*, by EDWIN L. ASH, M.D. Lond., which contains a similar summary of the elementary anatomy and physiology of the human nervous system. These are specimens of a class of books which appeal to medical students and nurses. With regard to the students, we repeat the warning to which we have had occasion so frequently to give utterance—that such condensed guides as these can be serviceable only if properly used for reviewing knowledge acquired practically and by study of fuller works, if they are used as substitutes in either direction they are likely to be pernicious rather than useful.

The publication of the new Pharmacopœia of 1914 has been naturally followed by new editions of Pocket Prescribers and Summaries of Materia Medica. *A Conspectus of the Principal Changes of the British Pharmacopœia, 1914*, by J. H. WILLIAMS, F.C.S. (London: Corbyn, Stacey, and Co., Limited. 1915. Price 1*s.*) contains an alphabetical list of the preparations in the new Pharmacopœia, with their doses in Imperial measure, as well as in the decimal measures adopted by the Pharmacopœia and new preparations or those which have been altered from the old Pharmacopœia are indicated by a marginal letter. Preparations of the preceding Pharmacopœia which have been omitted in the present one are given in italics in their alphabetical order. There is a useful critical introduction.——*Husband's Students' Pocket Prescriber and Guide to Prescription Writing*, in its fifth edition, by Dr. DAVID MITCHELL MACDONALD (Edinburgh: E. and S. Livingstone. 1915. Pp. 122. Price 1*s.* 6*d.* net), also has been revised in accordance with the new Pharmacopœia, and so has the *Posological Tables, Appendix on Poisons, Index of Diseases and Medicines arranged according to their Actions*, fourth edition, by Dr. WILLIAM CRAIG (Same publishers and date. Pp. 132. Price 1*s.* net). Both these booklets are too well known to need any detailed description.——Yet another is the *Supplement to the British Pharmaceutical Codex, 1911*, published under the Direction of the Council of the Pharmaceutical Society of Great Britain (London: Pharmaceutical Press. 1915. Pp. 75. Price 1*s.* net), which contains particulars of important additions and alterations which have become necessary since that work was published, including new monographs, galenical formulæ, a series of formulæ for test solutions and microscopical stains, a list of the chemical equivalents of substances known under proprietary tradenames, and alterations in the text of the Codex that have been rendered necessary by the 1914 revision of the *British Pharmacopœia*. There is also a table of corrigenda for the Codex of 1911.

THE LANCET.

LONDON: SATURDAY, JUNE 19, 1915.

The Weapons of Chemistry.

METHODS of warfare have advanced enormously in technique though not in design, for the return by the Germans to the stink-pot of savagery, although elaborate scientific machinery is employed, remains a manifestation of primeval barbarity. Since the days of bows and arrows and battering-rams we seem to have made vast strides, but, as recent history clearly shows, the radical change has been chiefly a transition from physical to chemical resources. Improvements of mechanical transport and means of intercommunication, coupled with the growth of populations, have led to the formation of far larger armies, and the weapons of destruction have developed as the work required of them has grown immeasurably. And to a great extent the chemical activity has been modern. The gun itself is not a very archaic weapon, and there are still preserved amongst us early specimens of it in the shape of the flint-lock musket, with its attached ramrod for driving home the powder. It is only comparatively recently, too, that the machine gun has succeeded the cannon. Gunpowder was the only explosive known for a long time, and it was not until about 30 years ago that it was gradually replaced by the cartridge still with gunpowder in it, but later with a smokeless explosive. The introduction of the smokeless explosive or of nitro-compounds in general was the beginning of a rapid advance in firearms and artillery. It made possible the machine gun and the leviathan gun which now can project something like a ton's weight of metal to its target at a distance of 18 miles or more. Coupled with the art of the gunner it is chemistry that has made these achievements possible.

It is not difficult to find in other directions proofs that chemistry has very materially contributed to making modern systems of warfare the refinements of terror that they are. Can any more amazing agent for the purposes of war be mentioned than petrol itself? Not many years ago petrol was familiar chiefly as a light gas-smelling fluid which effectively removed grease spots from clothing, and outside its small employment in household and industrial affairs it had little application. Now it is the foundation of the gigantic motor industry. While the internal combustion engine has revolutionised the world's methods of propulsion incidentally in peace time, bringing the motor-bus and the taxi-cab into being, it has made possible the aeroplane, the dirigible, and the submarine, all of which are stern potentialities in modern warfare and are exercising a far-reaching influence on the issue of the struggle. The distillation methods of the chemist isolated this readily gasified liquid from the black viscid mass exuding from the oil well. And the submarine demands another chemical service; its crew must be kept alive while the craft is submerged, and chemistry steps in and supplies compressed oxygen to support the lives of the crews. The work of the chemist in these directions is well known to all, but recent events may well lead us to wonder whether the service of chemistry is going to be requisitioned for war purposes unaided by arms or artillery. It would be rash to assume that the future quarrels between nations are likely to be decided by the side which possesses a subtler knowledge of chemistry than the other; to talk of this war, as some are doing, as "a chemists' war" is to lose a sense of proportion, and there is little reason to suppose that subsequent events will show, for example, that poisons adroitly used will oust the accurately aimed bullet and shell. Discussion has been busy, since the enemy employed asphyxiating gases as a weapon in the field, in regard to the shapes which retaliation by this method could take. Glib references are made to the possible use of potent poisons, arsenical gases, prussic acid, or some death-dealing substance which shall improve upon the chlorine compound adopted by the enemy. It is well to remember that there is evidence that the enemy has seriously and systematically studied this question for some time, and we may be fairly certain that the gas used was decided upon after considerable trials as the most available and practicable for the ghastly ends in view. At all events, such other deadly materials as may be available are as much in the enemy's hands as in ours, and neither side would be likely to gain any permanent benefit by such machinations. We must not dismiss as impracticable the wilder dreams of the chemical poisoner, for in chemistry it would seem that no sooner is a suggestion dismissed as foolish than it at once appears in the form of accomplished fact; but we lean to the belief that the capacities of gas poisoning have been exhibited to the full. The distribution of poisons by means of bombs may add a degree of certainty to the murderous plan. The conveyance of a bank of gas along a definite line by air currents cannot always be depended upon, and it has already happened that the liberated gas has come back in boomerang fashion upon the ranks from which it was projected.

Does the time approach when owing to the high developments of chemical and physical science warfare will become well-nigh impossible? The speculation will claim greater attention in view of the new resources of the present war. According to this view, the race for supremacy will be won by that nation which is first in making fresh scientific discoveries. Possibly explosives may be rendered useless when invisible means are found to fire them from great distances, as might well prove to be the case in these days of wireless

waves or radiations and projections. It would be a remarkable outcome of scientific discovery applied to modern methods of warfare if by their precision and certainty the new weapons automatically extinguished themselves. Mental subtlety may thus defeat its own ends, and as future struggles are not likely to be decided by a reversion to old-fashioned fighting methods, arbitration should at length succeed. But the man of the future in war, as he is in medicine, would seem to be the chemist.

Cervical Gland Tuberculosis.

THE frequency with which enlarged cervical lymphatic glands occur renders an investigation in regard to their etiology a very interesting one. Much controversy has occurred as to the identity or diversity of the organisms which produce the condition, especially as to whether the human or bovine type of the tubercle bacillus is the more common. More recently another point has arisen—namely, whether atypical tubercle bacilli can be isolated in cases of cervical gland tuberculosis. We publish this week an investigation by Dr. A. STANLEY GRIFFITH into the subject, and he mentions that of the several observers who have made bacteriological investigations of tuberculous glands in the neck DUVAL alone claims to have isolated such organisms. These cultures bear no resemblance, judging from the information given as to cultural characters and virulence, to any tubercle bacilli hitherto described. DUVAL'S results are obviously exceptional and require corroboration before they can be accepted. The possibility of such bacilli being found in tuberculous cervical glands is, however, of some interest, inasmuch as this is the only form of tuberculosis of which lupus has been observed to be a direct sequela. It is further noteworthy that about 12 per cent. of the cases of lupus which Dr. GRIFFITH has examined have followed tuberculosis of the cervical glands, and in all but one of these cases the lupoid lesions have yielded atypical tubercle bacilli.

Dr. GRIFFITH gives the results of observations on material obtained by surgical operation from 110 persons, including children, adolescents, and adults. In the majority of the cases the actual substance consisted of lymphatic gland tissue. He divides the cases into three groups. In the first the glands were not macroscopically tuberculous and did not produce tuberculosis in guinea-pigs. Efforts to inoculate guinea-pigs from the glands in the second group of patients also proved negative, although the glands were obviously of a tuberculous character, and in many instances tubercle bacilli were found in smear preparations of the emulsions used for inoculation. In the third group, comprising 71 of the 110 cases, the original material produced tuberculosis in guinea-pigs, and cultures were obtained. It is to this group that special attention may be directed. The opinion has been expressed by many observers that the bovine type of tubercle bacillus is chiefly to be found in young life, whilst the human type is more common after 10 or 15 years of age. This is well indicated by the statistics submitted by Dr. GRIFFITH, for he shows that the proportion of bovine infections is highest in children under 5 years of age, diminishing as age advances. But in his cases the percentage of adults over 20 years of age infected with bovine tubercle bacilli is remarkably great. According to these figures, there is a marked contrast between cervical gland tuberculosis in the adult and pulmonary tuberculosis in which the bovine type is comparatively rarely found. In another table Dr. GRIFFITH analyses the cases in accordance with the locality from which they were derived. We agree that the figures are not large enough for comparative statistical purposes as between different centres of population, but none of the localities investigated seemed to enjoy freedom from risk of infection with bovine tubercle bacilli.

In the second group of cases referred to by Dr. GRIFFITH inoculation failed to produce tuberculosis in guinea-pigs; this fact would seem to bear on the prognosis of cervical gland tuberculosis. It is recognised that in glandular tuberculosis there is a tendency to spontaneous cure, and probably in the patients belonging to this group arrest of the active processes had taken place. It would be of interest to know whether the disease produced by the bovine type of tubercle bacilli is more prone to spontaneous cure than is that occasioned by the human type. Dr. GRIFFITH makes some reference to this point, but further investigation into the matter is desirable. The results of operation on enlarged glands in the neck are well known to be favourable, so are the effects of exposure to pure air and good feeding; but in estimating the comparative results of any therapeutic measures employed in connexion with tuberculous glands the tendency to spontaneous arrest must be remembered, or false ideas on methods of treatment may easily arise. Indeed, the same principle applies to the use of remedies in all forms of tuberculosis: the development of the natural resistance of the body is of primary importance, and placing the patient under favourable hygienic conditions in every way is the easiest and most practical manner in which the desired effect may be produced. The incidence of cervical gland tuberculosis is by no means confined to children or adults in large cities. In the towns and villages on the coasts of Devonshire and Cornwall, where young patients are so often sent in order to obtain the benefit of the fresh air, many children who have been born and brought up in the districts are found to suffer from the same condition, and the explanation is forthcoming when these children are seen in the shut-up rooms and unhygienic surroundings of their homes. The importance of pure air by night and by day, and suitable nourishment is accentuated by such facts.

Annotations.

"Ne quid nimis."

HOLIDAYS AND HEALTH.

IN normal times the advent of June brings with it thoughts of holidays. But these are not normal times. Owing to the great war but little, if any, consideration is being given to the annual vacation. The possibilities of the continent are gone for the time, the withdrawal of all cheap facilities on the railway will check the traveller at home, and with a sovereign only buying the same quantity of food as 15*s*. bought a year ago everyone has less money to spend. And as the days, the weeks, and the months of the war roll on so the demand for labour everywhere increases in every phase of our national life. Yet those who badly feel the need of some respite must be advised to take it, if they can get it, however ill-attuned they may feel, for otherwise the period may be shortened during which their work will be of any value; and especially is it the town-dweller who needs a new environment if only for a few days. The practical question, of course, is whether it would be possible to combine two sets of circumstances in some way that might be productive for the nation. There is a great deal of work to be done throughout the country-side, and a large number of urban amateurs should be available for such work from now onwards. To these the employers of labour might look for some of the help that is needed in the busy agricultural season, when even in normal times there is a difficulty in securing the required hands. Thousands of individuals at the end of July—females as well as males—will be "let loose," as it were, from their everyday toil, a very large number with a holiday of varying periods extending from two to four weeks, and many could arrange perhaps to be absent from their desks for a longer period. The suggestions which have been put forward in various quarters that these holiday-makers should occupy their time in assisting in the agriculture of the country are heartily to be commended; we should be delighted to hear that the stage of suggestion had passed to that of arrangement. We can rest assured that there will be no holidays—in the general acceptance of the term—for our enemy civil populations this summer. The Germans, for example, will not, where they can possibly help it, allow their industries to suffer for the want of labour, and it behoves all of us to see that our relaxation period is not wasted. As far as is possible the work which many of our fighting men would have been doing at home ought to be carried on by all unoccupied hands, and there is bound to be a great demand for labour in our agricultural industry. To those engaged in sedentary occupations and all brain-workers a holiday on the land helping the farmer garner in the harvest would be a real holiday both from the mental and physical health point of view. The change of occupation, change of environment, change of scene, and change of diet would prove to many an excellent tonic—as beneficial as "training" has been to those who left their offices for a suit of khaki. There should be a ready and quick response to any call for help from our holiday-makers, but the value of such assistance would be multiplied a thousand-fold if it were organised and put upon a definite basis. The grave error made by all citizens of towns is to regard agricultural labour as unskilled, whereas much of it is of a highly technical quality. The assistance of casual holiday makers need not be despised, but if that assistance could be sifted, coördinated, and supplied in regular shifts to meet ascertained shortages, its value would be incalculably enhanced.

THE VIABILITY OF THE PLAGUE BACILLUS.

THE experience of our Indian plague experts seems to be that the life of the bacillus pestis outside the living animal body is comparatively short, at least under the conditions associated with the climate of India. On the other hand, certain American experts, and among them Dr. Rosenau, express the opinion that the plague bacillus after all is not such a frail organism as was formerly supposed, and that with the help of cold and moisture its life may be prolonged for a considerable period outside the body of an animal host. Given, therefore, abundant albuminous material, a low temperature, and a moist environment, the bacillus pestis may remain viable for a long time. Such conditions presumably might be found when the body of a plague patient has been buried in suitable soil. In the Proceedings of the Medical Association of the Isthmian Canal Zone (Vol. V., Part 2), recently published, a paper is contributed by Dr. H. C. Clark bearing on this subject, and entitled "Note on the Viability of Bacillus Pestis in a Cadaver buried in Quicklime." It appears from this paper that certain excavations were found necessary on Flamenco Island in the Bay of Panama, involving the removal from its grave of the body of a plague patient who had died two years and eight months previously and had been buried in quicklime. The opportunity was taken during the removal of the corpse to ascertain if any living plague bacilli were present in the body. On opening the grave the corpse was found enclosed in lime except where the body rested on the ground, the bottom of the coffin having become disintegrated. The skeleton was perfectly dry, and there was no evidence remaining of visceral tissue or clothing. The skull and femur were selected for special examination. A sterile wire with cotton swab was passed up the foramen magnum and applied to the inner table of the cranial vault, then withdrawn, and agar plates were inoculated from the swab. The condyle of the femur was split and material similarly obtained from the cancellous bone. The agar plates were examined later by Dr. L. B. Bates, bacteriologist to the Ancon Board of Health, who reported that the cultures showed a variety of bacteria, yeasts, and moulds, and that guinea-pigs inoculated with the material had remained in good health. The results were, therefore, entirely negative. Dr. Clark is of opinion that though the amount of material infected by plague bacilli in this body was originally large, yet no trace of it remained at the end of two years and eight months. Probably the corpse might have been removed from its grave at a much earlier period without danger to anyone. No doubt, as he says, the saprophytic organisms greatly aided the quicklime in destroying the plague bacilli. It appears to us that the results observed in this instance were only such as might have been expected, for the experiments in this country of Klein and others have shown that with the advance of putrefaction in a corpse all non-sporing pathogenic organisms are quickly destroyed, even the most persistent of them disappearing within a few weeks.

FRENCH OBSERVATIONS ON THE EFFECTS OF THE IRRITANT GASES USED BY THE GERMANS.

AT a meeting of the Académie de Médecine of Paris Dr. R. D. de la Rivière, of the Institut Pasteur, and Professor J. Leclercq, of Lille, have now made an important pathological report on the effects of the irritant gases—chlorine and bromine—used by the Germans. Its interest is increased by observations that so far have not been recorded by our army surgeons. Our *confrères* had under observation in hospital at Calais 112 soldiers who had been exposed to gas at Langhemarck. As the distance from the fighting line is short they were able to examine the patients a few hours after the intoxication. The irritation of the respiratory mucous membrane caused abundant expectoration which was soon tinged with blood. Those who could not fly died vomiting blood. Others, much prostrated, crawled to the rear vomiting and expectorating blood, and they passed bloody urine. On admission to hospital the eyes were watering and the eyelids were swollen. The cheeks and lips were violaceous red, the lips were violaceous, the features were drawn, and the nose was pinched. The patients were harassed by dyspnœa and incessant cough. Some complained of a stitch in the side. There was abundant rosy frothy expectoration, sometimes frankly bloody. Speech was painful and jerky. The majority of the patients presented symptoms of inflammation of the whole respiratory tract extending to the finest bronchial tubes. In these the condition was not grave. But in others the pulmonary lesion was severe and took the form of broncho-pneumonia or gangrene of the lungs. Two patients presented the phenomena of hæmolytic icterus. Another showed hæmoglobinuria for several days. Several had persistent albuminuria. Most of the patients passed concentrated high-coloured urine containing much biliary pigment. At the onset the sputum was characterised by desquamative elements and some polynuclear cells, but soon it was modified so as to indicate congestion and, in some cases, gangrene of the lung. At the onset the microbial flora in the sputum was ordinary, but sometimes anaerobes were found, the bacillus perfringens in particular. In the cases of gangrene of the lung the microbial flora was rich in anaerobes (bacillus perfringens, bacillus serpens, and bacillus ramosus). The findings in a necropsy in a case of death from pneumonia confirmed the conclusions drawn from the clinical phenomena. There were congestion of the whole respiratory tract, injection of the digestive tube, and massive degeneration of the liver, spleen, and kidneys. Massive pneumonia of the right lung, with gangrene here and there at the base, was also found.

THE TREATMENT OF RICKETS.

Dr. Giuseppe Carpani, from his pathological and clinical researches published recently in *Il Morgagni*, has formed the opinion that rickets is a disease of bony development, and that four glands—thymus, thyroid, pituitary, and adrenal—have a marked stimulant and regulating influence over this development. Any one of these glands may be deficient in its function and produce a dystrophic condition which predisposes to rickets. Owing to the correlation existing between these endocrinic glands, a disturbance of function in one of them causes disturbance of function in the others, so that the complex dystrophic picture is the result of failure in function of the entire group. Hence, the indication is to substitute pluriglandular for uniglandular opotherapy, which has hitherto given somewhat favourable but inconstant results. The author gave powdered and dried gland substances *in toto*, in doses suitable to age, in milk daily for 50 days, with the omission of one week after the first month. He noticed that improvement was generally rapid and striking during the first weeks of the treatment, the functions of digestion and assimilation being first influenced, then those of the nervous system. In the following weeks the progress was slower, and beneficial results were observed in the blood and osseous system. The treatment was always well borne. An interesting point observed by the author was that in the cases of children to whom calcium salts were administered at the same time no special rapidity or efficacy of cure was seen, a fact of some importance as bearing on the question of the calcium content in rickety bones, the fundamental fact seeming to be not deficiency of calcium but inability of the tissues to fix it.

THE MARRIAGE OF LEPERS.

THE Russian Medical Council has considered the question raised by the Holy Synod of the permission to lepers to marry amongst themselves, and has given the opinion that whilst lepers may not be married to healthy mates there is no objection to lepers marrying lepers. The Council thinks that in respect to the possible influence of the leprosy of the parents on their children in the spread of the disease the factor is relatively weak; besides, the birth-rate in such cases is very low, and the percentage of infant leprosy under such conditions is very small—about 5. With that reply we are in agreement generally. There can be little doubt that the best way of isolating lepers in affected countries is to intern them, under proper medical supervision, in special colonies or settlements where they can, as far as is practicable, lead active and useful lives, engaged in farming and other suitable occupations. Leper asylums and such institutions are best reserved for cases of old and advanced disease where incapacity for employment has been brought about by the ravages of the malady. In the leper colonies or settlements patients of both sexes have to be isolated, and we would raise no objection under certain conditions to the union of these persons if they desired to marry. Young leprous adults of both sexes are more likely to become more hopeful, contented with their lot, if they have a home of their own and a family life, even of a limited extent. The fertility of leper marriages is not great, and as the leprosy advances impotence usually develops. It is imperative, however, that arrangements should be made in advance, and the reasons carefully explained beforehand to the leprous parents, to remove at once any newly born infant from the custody of its mother to a distant home provided by the authorities where the child may grow up without danger of acquiring the infection from its maternal parent. Leprosy is not believed to be a hereditary disease, but close and intimate contact, such as that between a mother and child, is regarded as affording the surest means of conveying the infection from one person to another. We freely admit that the parting of the leprous mother from her newly born child would be painful to her, but

blood was examined and gave a leucocyte count of | left cerebellar and left

in the interests of the child such parting is absolutely necessary and should be regarded as inevitable by both parents. The lot of the leper is admittedly a hard one, and whatever can be done, consistent with medical knowledge and science, should be done in order to alleviate as far as possible the hardships of these unhappy sufferers. With the indicated reservations, we agree with the Russian Medical Council in their view that the marriage of one leprous person with another is, under certain circumstances, permissible.

PNEUMOCOCCÆMIA.

SEPTICÆMIA due to the diplococcus has lately assumed a new importance in human pathology, and Banti's idea that the pulmonary localisation might be due to the fixation of the circulating micro-organism by some predilection of the lung is acquiring more and more force and consistency with truth. Dr. T. Pontano has just published in *Il Policlinico* three very interesting cases bearing on this subject. Without going so far as to affirm absolutely that the diplococcus always enters the circulation in the first instance and that a condition of septicæmia always accompanies the pneumonia, the author considers that these cases show that the diplococcus can enter the circulation by little heeded routes such as the tonsils or lesions of mucous membrane, without leaving any trace of its passage, and may cause septicæmia with pulmonary localisation, or sparing the lung, with other local manifestations. The clinical features of diplococcic septicæmia do not differ from those of the ordinary forms, but two are worthy of special attention—namely, the intermittence of the fever with rigors and sweating, similar to suppurative fever, and the intense leucocytosis. The first of Dr. Pontano's cases is the most interesting. There had been an attack of lobar pneumonia a year previously, and the symptoms were those of a pseudo-tetanus, painful contractions of the muscles of the vertebral column, trunk, and limbs, with Kernig's sign; there was also a general febrile condition. The cerebro-spinal fluid was sterile, but a lanceolate capsulated diplococcus was cultivated from the blood which proved fatal to rabbits. Another case described by him was one of purulent meningitis with thrombotic endocarditis in which an identical micro-organism was cultivated from the blood. The lungs were normal.

ACIDOSIS IN CHILDREN.

IT is suggested that Naunyn was the first to associate the symptoms of acidosis with their cause, an altered metabolism leading to definite blood changes. That the entity of acidosis is a very real clinical condition especially in children has been recently emphasised by Dr. A. A. Howard in a valuable paper in the *Boston Medical and Surgical Journal*. It is generally supposed to be related to the cyclical vomiting in children, but Dr. Howard suggests that this latter condition is extremely rare in absence of certain reasonably definite and immediate predisposing causes. He rather suggests, it seems, that certain children are predisposed to the condition of acidosis, and are at times especially susceptible to the train of symptoms it causes. Usually an immediate exciting cause for acidosis is present, and an acute infection is the most frequent of these causes. It is necessary to distinguish the clinical cases of acidosis from those which merely show the presence of acetone or diacetic acid in the urine, for this latter phenomenon is not uncommon. Acidosis is perhaps commoner in the children of the upper and middle classes. Boys and girls seem equally liable. It is as common below the age of 2 as above. The symptoms are often ushered in by premonitory loss of appetite, restlessness, or irritability. Constipation at this stage is frequent. Then the mouth becomes dry, acetone appears in the breath, and may be demonstrated in the urine. The respiration is rapid and there may be nausea or vomiting. Vomiting was a symptom, usually an early one, in 51 out of 64 of Dr. Howard's cases. It is significant to note, too, that in the 13 cases in which no vomiting occurred treatment directed to the acidosis had been begun early. In severe cases of acidosis the child passes on to listlessness and drowsiness, the eyes become sunken, and the breathing may become irregular and Cheyne-Stokes like in type. There were 3 fatal cases in the series of 64. The clinical impression in many of these cases is that of a degree of illness and exhaustion which cannot be accounted for by the local signs or known lesion present. It is important to recognise the condition, as treatment directed to its relief may be life-saving in certain circumstances. Sodium bicarbonate given, alternately with glucose, by mouth is the best measure. Even if nausea be present, after one or two attempts the patient can usually retain the drug given in this way. The effects of this treatment are eminently good and often rapid in action. All food must be stopped and return to it should not be uselessly hurried. The need for seeking the presence of diacetic acid or acetone in the urine in cases of this kind is obvious in its important relationship to treatment.

MALARIA ARISING IN A NON-MALARIAL DISTRICT.

IN the *Medical Journal of Australia* Dr. Sydney Jamieson has reported a case of considerable importance, as it shows the possibility of malaria arising in a non-malarial district. A "scrub cutter and cleaner," aged 58 years, working in the Gosford district of New South Wales, was admitted into Sydney Hospital on Jan. 5th, 1915, complaining of headache, shivering attacks, and lassitude for ten days. He was born in Somersetshire, England. In 1880 he left Plymouth by a sailing vessel for Sydney, where he arrived without having touched at any other port. He worked as a labourer in the Parramatta district. In 1884 he went to Broken Hill *viâ* Port Pirie and after two months returned to Sydney; since that time he had lived in New South Wales. For 30 years he had been subject to slight cough. On examination he looked pale and cachectic. At the bases of the lungs a few high-pitched rhonchi were heard. The spleen was not enlarged. On the day after admission the temperature rose to 102·8° F. at 8 P.M., but fell almost to normal after four hours. On the following afternoon it rose to 104·8° at 4 P.M., but at midnight had fallen to 97·8°. On every other day during the next fortnight the temperature rose in the same way, ranging from 101·5° to 104°. The attacks were associated with headache and shivering and ended in profuse perspiration. They showed an unmistakable resemblance to simple tertian malaria, though the patient had never resided in a malarial district. On Jan. 8th the

blood was examined and gave a leucocyte count of 10,125 and a negative Widal reaction. In the sputum the prevailing organism was the staphylococcus aureus, and there were no tubercle bacilli. On Jan. 12th a careful search was made for the plasmodium malariæ in the blood without result, but on the 18th the tertian type of organism was found in considerable numbers. The disease quickly yielded to quinine. Both the anopheles and the stegomyia mosquitoes are present in New South Wales, but no case of malaria of local origin appears to have been reported previously. It is known that infected mosquitoes can convey the plasmodium malariæ in non-malarial climates. The classical experiment in which Sir Patrick Manson's son infected himself in London by means of a mosquito brought from Rome showed this. Mosquitoes do not appear to travel very far, but in exceptional instances may be carried long distances by ships and trains. A considerable number of soldiers infected with malaria have returned to Australia from New Guinea, but the patient had never been brought into contact with any of them. Dr. Jamieson suggests the possibility of malaria becoming endemic in Australia.

BRITISH PHARMACEUTICAL CONFERENCE.

THE annual meeting of the British Pharmaceutical Conference will be held at 17, Bloomsbury-square, London, on July 14th, under the presidency of Captain E. Saville Peck, M.A. In view of the fact that the majority of members of the Conference are directly or indirectly engaged in the prosecution of the war, the Executive Committee has decided to abandon entirely the social side of the meeting, and also to hold no meetings of the Science and Practice Sections. It may be remembered that in the ordinary course of things the annual meeting would have been held at Scarborough.

FALSE LOCALISING SIGNS IN CASES OF CEREBRAL TUMOUR.

THE practitioner familiar with the classical triad of symptoms—headache, vomiting, and optic neuritis—characteristic of cerebral tumour, should be on the look-out for cases where one or other or all of these symptoms may be wanting. They may fail, for instance, in progressive hemiplegia—i.e., in hemiplegia which is mild in degree at first and becomes progressively more serious; here the clinical type suggests increasing pressure by itself, whatever other signs are present or absent. Again, Jacksonian epilepsy is a suspicious symptom, though it occur monosymptomatically. Once more, a fair number of cases originally diagnosed as idiopathic epilepsy turn out eventually to be cases of cerebral tumour. It behoves the physician, therefore, to keep such cases under close and repeated observation, for as the disease progresses the diagnosis may have to be reconsidered. There is another type of case, however, where a diagnosis of intracranial neoplasm is correctly made, but where the localising, or rather the apparent localising, symptoms are misleading. Surgical intervention depends for its success on correct localisation, but even the expert is occasionally at fault in his localising diagnosis. Some types may briefly be mentioned. It is a fairly common experience to find frontal tumours with cerebellar signs and *vice versâ*. As a rule in such cases, also, right frontal tumours are diagnosed as left cerebellar and left as right. A probable explanation is that with increase of intracranial pressure there is a tendency for part of the cerebellum to be pushed into the foramen magnum, whence cerebellar pressure symptoms readily arise, and these may obscure the frontal symptoms inasmuch as the latter may be slight and not easy of detection. In any case of intracranial tumour, it should be remembered, indirect cerebellar symptoms may be present; and cases of temporal lobe tumour, for instance, have been recorded where the supposed pathognomonic cerebellar tests elaborated by Bárány have been positive. Another type of false localising signs is that where Jacksonian epilepsy is an indirect and not a direct symptom. Even strictly motor symptoms may mislead. Various instances have been put on record of Jacksonian fits arising from stimuli originating outside the motor area proper. In some cases where internal hydrocephalus results from a basal or subtentorial tumour motor symptoms may be present which are secondary and indirect, and therefore apt to confuse. Again, paresis or paralysis of one or other external rectus is probably of little localising value by itself, as in almost any case of subtentorial tumour, and in some supratentorial cases too, the symptom may signify only a heightened intracranial pressure and nothing more. In fact, it is well never to lose sight of the obvious fact that if a foreign body grows within the cranial cavity it can only do so at the expense of other tissues, and such secondary changes as local evascularisation, œdema, ventricular dilatation, pressure of one or other part of the cranial contents against some bony prominence or into some bony ring may effectually mask the actual lesion and lead to erroneous localisation. For this reason minute attention should always be devoted to the earliest symptoms in point of time, however slight or transient they may seem to have been, since they, rather than any of the more prominent but subsequent ones, may really point to the exact site of the disease. Another reason is that there may be a direct transference of functional disturbance from one part of a linked physiological system to another through the medium of so-called diaschisis, whereby, apart from extraneous causes such as have been enumerated above, symptoms are produced in one area, the morbid condition giving rise to which is, in fact, situated in a different, though physiologically connected, area. Thus in some cases of tumour of the motor cortex, with Jacksonian epilepsy, twitching of the corresponding muscular groups homolateral to the lesion has been noted, by diaschisis from the affected motor area to the motor cortex of the opposite hemisphere. Some of these and other important considerations in the diagnosis of cerebral tumours are well illustrated in a series of cases carefully observed by Dr. S. P. Goodhart and Dr. H. Climenko, of the Montefiore Home and Hospital, New York, and published by them in the April number of the *Journal of Nervous and Mental Disease*.

AN Order in Council, dated June 10th, declares that the Province of Saskatchewan, in the Dominion of Canada, shall be deemed a separate British possession, and that the second part of the Medical Act, 1886, shall be deemed as from the date of the Order to apply to the said Province of Saskatchewan. The effect of this is to render medical degrees of that province under certain conditions registrable without examination in the colonial part of the Medical Register.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Dispensary Doctors as "Medical Advisers."

THERE is no doubt that a good deal of inconvenience to the sick poor has arisen from the fact of certain dispensary medical officers accepting the office of "medical adviser" to the Insurance Commissioners. The duties of the office entail travelling over wide areas, whereas dispensary medical officers are not allowed to leave their districts even for a day without making provision for the discharge of their duties. It is impossible for those who are medical advisers to make such arrangements since the profession disapproves of the office, and those who hold it are not assisted in any way by their medical neighbours. Some boards of guardians also have considered that the Poor-law duties have been neglected by the officers who are medical advisers, and have proposed to dismiss them from their appointments as Poor-law officers, but up to the present the Local Government Board has not sanctioned such action. Recently, however, a war vacancy having occurred in the Poor-law service of the Newry union, the guardians appointed Dr. T. Cronin as temporary medical officer. The Local Government Board has declined to sanction the appointment on the ground that Dr. Cronin is a "medical certifier" to the Insurance Commissioners, and that "the Board is not satisfied that he could attend efficiently to the wants of the sick poor" of the district.

A Students' Strike.

A certain number of the students at the school of the Royal College of Surgeons in Ireland struck work last week, as far as the department of anatomy was concerned, as a protest against the choice of the Council in the recent election of examiners in anatomy. It is usual for the professor of anatomy to be one of the examiners, but this year the professor is absent on military duty, and the students took umbrage at the fact that his deputy was not elected examiner. After a few days' abstention from work the students returned, pending the Council's considering their protest. The Council can hardly assent to the position that the election of examiners should be subject to veto by the prospective candidates.

The War Office and the Belfast Scheme for a Base Hospital.

A number of Irish medical men, mainly colleagues hailing from Belfast and its immediate vicinity, and, numbering some well-known surgeons, physicians pathologists, and sanitarians, recently appealed to the Director-General of the Army Medical Department to be allowed to staff a base or stationary hospital at the front. The offer was that for periods of six months they would work as a band and succeed each other in relays of, say, 20 to 25 men at a time for half a year. In this way the War Office would acquire, they suggested, the help of some of the most experienced surgeons in Ireland, over military age, who, by manning a base hospital, would free younger men for other work. The War Office has been compelled to refuse this patriotic offer, as there are no regulations in force to enable it to be accepted or worked. The reply of the War Office is much resented in Belfast. As Mr. Lloyd George recently said at a public meeting in Liverpool, "In this tremendous crisis of the empire there is one thing we want less of than usual, and that is red tape. It takes such a long time to unwind and we can't spare the time."

Ulster Medical Society.

At the annual meeting of the Ulster Medical Society, held in the Medical Institute, Belfast, the following were elected office-bearers for the session 1915–16:—President: Dr. A. G. Robb. Vice-Presidents: Mr. T. A. Davidson and Dr. W. E. Hadden (Portadown). Treasurer: Dr. V. G. L. Fielden. Librarian: Dr. W. L. Storey. Secretary: Mr. S. T. Irwin. Editorial Secretary: Dr. C. G. Lowry. Council: Dr. G. A. Hicks, Mr. J. O'Doherty, Dr. J. C. Rankin, Dr. J. L. Rentoul (Lisburn), Dr. F. C. Smyth, and Mr. H. Stevenson.

The McQuitty Memorial Exhibition.

The McQuitty Memorial Exhibition, given for clinical work to senior students attending the Royal Victoria Hospital, has been awarded to Mr. E. G. B. Calvert.

June 15th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

A Hostel for Disabled Sailors and Soldiers.

AN urgent appeal for help for the crippled men discharged from navy and army hospitals has gone out in Scotland. These men are not infrequently under the necessity of returning to their homes, where they cannot have advice or help to equip them for the future. It is proposed to keep the crippled and disabled men at a hostel until they are fit for employment, and then to send them to the various institutions where they can be taught trades of suitable kinds. Edenhall, Kelso, has, through the kindness of Major Douglas, been taken for the purpose of a hostel, and will accommodate from 35 to 40 patients. By permission of the Berwickshire county directors, the hostel will be worked by the Coldstream Voluntary Aid Detachment under a fully trained nurse. As the hostel will be supported by voluntary subscriptions help is earnestly requested, and subscriptions should be sent to the treasurer, Mr. Douglas, Mansfield, Coldstream. All information regarding the hostel and admittance of patients will be given by Lady Isobel Douglas Home, The Horset, Coldstream, who has issued the appeal. Surgeon-General G. D. Bourke, Deputy Director of the Army Medical Service, has given this scheme his support.

The Edinburgh Academical Club.

The annual general meeting of the Edinburgh Academical Club was held in Dowell's Rooms, Edinburgh, on Friday, June 11th. The Right Hon. Sir J. H. A. Macdonald, K.C.B., Lord Justice Clerk, President of the club, presided. The chairman, in moving the adoption of the annual report, referred to various matters dealt with. He said that about 800 Academicals had been serving the King in various capacities since the outbreak of war, and of these over 40 had been killed in action. The club has raised £1200 for a motor ambulance fund, and two ambulances of the latest War Office design, which were nearly ready for sending to the front, have been presented to the Scottish Branch of the British Red Cross Society.

An Ambulance Car from Linlithgowshire.

Under the supervision of ex-Provost Gordon, Bathgate, the inhabitants of Linlithgowshire

recently subscribed towards the purchase of an ambulance motor-car for the use of the wounded soldiers at the front. On the afternoon of Wednesday, June 9th, the vehicle, a 16 h.p. Wolseley, with stretchers and fittings complete, was handed over to the Scottish Branch of the British Red Cross Society at 11, Blythswood-square, Glasgow, the headquarters of the Scottish Automobile Fleet. After the purchase of the car there was a balance of nearly £80, which was presented to the British Red Cross Society.

The Fire at Dunrobin Castle.

The modern portion of Dunrobin Castle, the Duke of Sutherland's famous Scottish palace, was largely destroyed by fire on June 13th. In the difficult task of combating the flames valuable assistance was rendered by Territorials who were in the neighbourhood, and also by a fire brigade section of the navy from Cromarty. All the wounded soldiers were rescued and removed in safety to accommodation that was found for them elsewhere. Unfortunately in the work of rescue Lieutenant Wilde, 2/5th Seaforth Highlanders, and two sailors were seriously injured and had to be removed to hospital.

The late Dr. E. W. Scott Carmichael.

The death occurred on June 12th, at his residence, 42, Palmerston-place, Edinburgh, of Edward William Scott Carmichael, Fellow of the Royal College of Surgeons, Edinburgh. Dr. Carmichael, who was in his forty-second year, came of a well-known medical family, for his father, Dr. James Carmichael, is a consulting physician to the Royal Hospital for Sick Children, and his grandfather was a much esteemed Edinburgh practitioner. Dr. Edward Carmichael was educated at the Edinburgh Academy and the University of Edinburgh. He studied subsequently in Berne, Berlin, Greifswald, London, Paris, and the United States. He was formerly senior demonstrator of anatomy in the New School of Medicine and assistant surgeon at the Royal Hospital for Sick Children, Edinburgh, at the Royal Infirmary, and at the Hospital for Diseases of Women. He also held the rank of captain in the 2nd Scottish General Hospital, Territorial Force. Dr. Carmichael was a frequent contributor of articles to the medical press. His literary work was stamped with scientific thoroughness, and it is to be hoped that the book upon which he had spent several years of work, and succeeded in completing only a week or two ago, will be published. He was an admirable speaker, and had the ability to inspire confidence in those who heard him. He leaves a widow and three young children.

The late Lieutenant D. G. Watson.

Lieutenant D. G. Watson, R.A.M.C., who has died of wounds received while on active service at the front, was the son of Mr. John Watson, B.A., headmaster of Broughton Higher Grade School, Edinburgh. He was a graduate of the University of Edinburgh in both Arts and Medicine. After graduating in Medicine Dr. Watson was appointed to a hospital at Windsor, and on the outbreak of war he joined the Royal Army Medical Corps. He had been at the front for several months, and when wounded was engaged in bringing in a stretcher party from one of the trenches under shell fire.

June 16th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Substitution of Hot Oxygen for Hot Air in the Sterilisation of Gangrenous Wounds.

M. Vignat has endeavoured to replace hot air by superheated oxygen in a large number of cases of septic gangrene following on deep charring. He considers this procedure superior to that of hot air. Its technique is very simple. An ordinary electric apparatus is used, and the source of air represented by the rotary pump is replaced by a cylinder furnished with a stop-cock. The current of oxygen can be regulated at will by means of this stop-cock. Certain precautions are necessary. The oxygen should never be used with Gaiffe's apparatus, as the oxygen produces with carburetted air an explosive mixture. In the passage of oxygen the generator of heat becomes heated more quickly, and in order not to damage it the rheostat which regulates the current intensity should be handled gently and progressively. It is necessary to be careful that the field in which compresses are situated in the neighbourhood of wounds is moist, as the action of the superheated oxygen is inflammatory. Oxygen seems to dry and sterilise moist gangrene better and more quickly than air. The action of heat is added to the action of the oxygen and also to the ozone which is produced, as is known, whenever oxygen is superheated.

The Destruction of Lice in Epidemics of Typhus Fever.

Dr. Delta, in the past Balkan campaigns, had frequent occasion to believe that the action of strong odours was destructive to lice, and he undertook numerous experiments on this subject. Living lice were put in the cavity of a piece of glass tubing 2 centimetres in diameter and 15 centimetres in length, plugged by means of two cotton wads loose enough to allow the circulation of air. On moistening one of the two wads with strong scent the insects withdrew little by little from the perfumed end and approached the opposite one. At the end of a certain time all the lice were dead. If the source of the odour was placed outside one of the corks the same phenomena were observed, followed by death, though naturally after a much longer time. In the control tubes in which the perfume was replaced by water, the lice remained alive moving freely in all directions. In another experiment a large tampon of cotton soaked with strong perfume was placed in the bottom of an upturned microscope shade. Above this tampon, but separated from it by a tripod of iron wire, was a piece of flannel a yard square, in the folds of which were a known number of living lice. At the end of a quarter of an hour, on the average of four experiments, the first louse was seen to emerge from the folds of the cloth and struggle to reach the open air. At the end of an hour four others disengaged themselves in like manner and remained on the surface without attempting to penetrate again into the interior, where the ten other insects were found motionless. Left in the open air four of them returned to life after a variable period of time. Finally it was shown that when the contact of the perfume and of the insect was made directly, the result was not long in being produced. The insect died in one or two minutes. In a recent epidemic of typhus fever at Alexandria in February, 1915, two distinct foci appeared, one in a

camp of Bedouins in the desert, the other in the very centre of the town. Among the Bedouins were counted in all 96 cases and 52 in the town. The disease was attacked by the ordinary methods of disinfection of the locality and of articles of bedding and clothing. And here, too, the procedure of perfumed lotions was put into practice in a systematic fashion, and to bring out its advantage more clearly, washing with hot water and soap was foregone, washing from head to foot with eau de Cologne locally manufactured and of poor quality, but emitting a very powerful and persistent aroma alone being practised. Then the epidemic ceased. It is evident that these observations cannot definitely prove the efficaciousness of perfumed lotions, but the procedure is new and deserves at least a trial.

The Treatment of Large Wounds by Sterilised Sugared Radio-active Mud.

Dr. Gougerot has obtained good results in the treatment of wounds and intractable ulcers by the use of a mixture of radio-active mud with sugar. This treatment is simple and inexpensive. The radio-active mud is sold commercially in boxes containing a kilogramme. This mud is diluted with water saturated either with white sugar (saccharum) or glucose, so as to make a thick though fluid paste. It is sterilised in little bulbs in the autoclave at a temperature of from 100° to 110° C. The wound having been washed with boiled water or sugared water, is coated with a thick layer of the mixture and covered with an aseptic compress that has been sterilised in the autoclave, and is then dressed in the ordinary way. If possible the wound is left three, four, or six days without changing the dressing, which is removed by moistening the compresses with boiled water. It is washed to remove the mud and a fresh mud dressing applied. The mud which has been used may be recovered by filtering the wash water through blotting-paper and cloth and by sterilising it afresh. The radio-active mud causes stimulation of torpid tissues; the sugar supplies nourishment to them. The ulcers usually granulate (*bourgeonnent*) rapidly, the wound becomes red, vivid, often very congested. This treatment should be applied especially to the cicatrisation of large superficial or deep wounds like those of varicose ulcers, but should not be applied to fistulous ones in which suppuration is maintained by foreign bodies or foci of osteitis. It is necessary first to suppress these causes and then the dressings of sugared radio-active mud begin their utility in promoting cicatrisation.

Protection of the Skull against Wounds by a Metallic Headpiece.

M. Le Dentu and M. Devraigne drew the attention of the Academy of Medicine, at the first June meeting, to the use of a metallic headpiece as a preservative against wounds of the head. Such wounds have become very frequent and represent 13·33 per cent. of all wounds. The personal observations of M. Devraigne clearly establish the advantage to the soldiers of wearing metallic headpieces. Out of 55 soldiers hit in the head and treated by M. Devraigne, 42 were without such headpieces and 13 possessed one. Of the 42 soldiers without, 23 suffered fractures which for the most part were followed by death, and 19 presented wounds of the head and scalp. Of the soldiers belonging to the second group 5 had simple superficial wounds or scratches or suffered no harm at all.

June 14th.

THE BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.

NEED FOR SURGICAL INSTRUMENTS IN BELGIUM.

THE information received from the Aide et Protection aux Médecins et Pharmaciens Belges Sinistrés to the effect that a further supply of surgical instruments would be useful in Belgium has now been confirmed by the National Relief Commission, and the British Fund is preparing to send through the offices of that commission a large supply of surgical instruments to Brussels. The response to the invitation to supply instruments, which has appeared at different times in these columns, has been very good, but further heavy demands upon the stock in hand would soon deplete it. We are therefore renewing the public request for instruments which for a time has ceased to appear, owing to the response seeming to meet the needs of the time. Mr. Meredith Townsend, Master of the Society of Apothecaries of London, has personally supervised the packing of a further consignment to Belgium, and all the instruments to be sent are of modern type and have been repaired in every way.

THE WEEK'S SUBSCRIPTIONS.

The week's subscriptions include a further contribution from the North of England Branch Fund, a most energetic body, and a handsome subscription of £168 from New Zealand.

	£	s.	d.
Salisbury Division, B.M.A. (per Dr. L. S. Luckham)—			
Balance of Private Divisional Fund ...	3	4	7
Mr. H. Browne	1	1	0
Mr. Challoner Clay ...	1	0	0
Dr. E. Winbolt Lewis	1	1	0
Mr. L. D. Saunders ...	1	1	0
Dr. E. F. Fison	1	0	0
Mr. G. W. Whiteley ...	1	1	0
Mr. J. Armitage... ...	0	10	6
Mr. S. Ellis	0	10	6
Mr. J. E. Gordon ...	0	10	6
Mr. W. Gordon	0	10	6
Mr. L. S. Luckham ...	0	10	6
Mr. J. Ogdin March...	0	10	6
Mr. Arthur Longman	0	10	6
Mr. W. Stratton... ...	0	10	6
Mr. C. Stratton	0	10	6
Dr. W. W. Ord	0	10	6
Mr. G. E. Thornton ...	0	10	6
Dr. F. B. Butler... ...	0	10	6
Dr. H. P. Blackmore	0	10	0
Barnsley Division, B.M.A. (per Dr. R. F. Castle) (third donation, total £43 11s. 6d.)	1	1	0
Medical officers serving in 1st Peshawar Division	12	13	4
Major N. Rainier, I.M.S.	2	2	0
Christchurch, N.Z., anonymous from (per Bank of N.Z.)	168	0	0
"A. K.," Chiengmai ...	2	2	0
North of England Branch Fund (per Dr. James Don and Mr. A. S. Perceval, Hon. Secs.) (fourteenth donation, total £723 14s. 7d.)—			
Dr. W. Galloway ...	2	2	0
Dr. J. W. Leech	3	3	0
Dr. Thos. Body	1	10	0
Dr. J. P. Elliott	1	1	0
Dr. C. R. Sutherland	1	1	0
Dr. F. O'Neill	1	1	0
Dr. John Anderson ...	18	17	6
Dr. J. W. Geddes ...	0	10	0
Dr. E. M. Swanwick...	1	1	0
Dr. Arthur Gardner ...	1	1	0
Dr. R. Brown	0	10	6
Dr. W. Hall	1	1	0
(Less expenses to date, £18 19s. 11d.)			
Dr. J. A. Frend, Rosario, Argentina (per Dr. H. Macnaughton-Jones)...	5	5	0
Dr. Fingland	1	1	0

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham-gate, London, S.W., and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Ltd.

THE APPEAL FOR SURGICAL INSTRUMENTS.

The Master of the Society of Apothecaries will receive and acknowledge with thanks any surgical instruments which are sent to the Apothecaries' Hall, Blackfriars, E.C.

DONATIONS AND BEQUESTS.—By will the late Dr. W. T. Edwards, of Cardiff, left £500 each to the Royal Medical College, Epsom, and the Medical Benevolent Fund. In the event of the failure of certain trusts the testator bequeathed £7000 to the University College, South Wales and Monmouthshire, towards the maintenance of the Medical School; £6000 to the King Edward VII. Hospital, Glamorganshire; and £1000 to the Blind Asylum or Workshop, Cardiff.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE undermentioned have been granted temporary commissions as Surgeons in His Majesty's Fleet: Hother McCormack Hanschell and Arthur Toulmin.

The following appointments have been notified:—Fleet-Surgeons: R. W. Stanistreet to the *Endymion*; S. Conner to the *Theseus*; and E. D. J. O'Malley to the *Maidstone*. Staff-Surgeon: J. Thornhill to the *Victorian*. Temporary Surgeons: W. H. Kay to the *Theseus*; and S. N. Toulmin to the *Endymion*.

ARMY MEDICAL SERVICE.

Colonel Sir B. G. A. Moynihan relinquishes his temporary commission (dated Feb. 28th).

ROYAL ARMY MEDICAL CORPS.

The undermentioned Majors to be temporary Lieutenant-Colonels: William A. Turner, R.A.M.C. (T.) (dated May 26th), and Charters James Symonds, R.A.M.C. (T.) (dated June 1st).

Major Robert H. Mills-Roberts, C.M.G., 6th Battalion, The Royal Welsh Fusiliers, to be temporary Lieutenant-Colonel whilst employed with a Field Ambulance of the 43rd Division (dated Dec. 2nd, 1914).

Theodore Mailler Kendall, late Fleet Surgeon, Australian Navy, to be temporary Major (dated May 17th).

The undermentioned are granted the temporary rank of Major whilst employed at the Welsh Metropolitan War Hospital:—Dated May 1st: Edward Barton Cartwright White. Dated June 2nd: Howard Davidson Harrison and Charles Henry Geoffrey Ramsbottom.

Major Arthur Nimmo Walker, 1st West Lancashire Brigade, Royal Field Artillery, Territorial Force, to be temporary Major (dated May 22nd).

Temporary Captain Edward L. Gowland, late Major, Royal Garrison Artillery (T.), to be temporary Major (dated June 11th).

The undermentioned to be temporary Captains: Dated May 3rd: Denis Murphy, late Captain, R.A.M.C. (Special Reserve), and Frank Alfred Amphlett Holmden, D.S.O. Dated May 6th: William John Gow. Dated May 7th: Ralph Bodkin Mahon. Dated May 14th: Thomas Watts Eden. Dated May 15th: Victor John Blake.

Temporary Lieutenant Percival Wood, late Surgeon-Captain, 3rd Middlesex Royal Garrison Volunteer Artillery, to be temporary Captain (dated June 15th).

Arthur Conyers Inman to be temporary Honorary Lieutenant (dated June 3rd).

The appointment to a temporary Lieutenancy of George H. Wood is antedated to April 13th.

The undermentioned temporary Lieutenants relinquish their commissions:—Dated May 14th: R. F. Ferris. Dated June 1st: James J. Keirans.

Temporary Lieutenant Ernest C. Peake relinquishes his commission on account of ill-health (dated May 21st).

The undermentioned to be temporary Lieutenants:—Dated Nov. 24th, 1914: Walter Amsden. Dated April 24th: Lieutenant James Burgess Woodrow, Canadian Army Medical Corps. Dated May 1st: Conrade Loddges. Dated May 3rd: Alfred Adams, Robert Ferguson Russell, Mark Stewart Fraser, Gerald Holroyde, Dallas Gordon Perry, Thomas Ewart Ashley, William Russell, Francis George Macneill Simpson, Rowland Hamer, Henry Edwardes Griffiths, Richard Walton Long, and Edward Thomas Larkam. Dated May 4th: William Harrison MacKinlay, Cyril Rodney Holtz Crawford, Ernest Camden Pratt, Alic Phillips, Robert James Bonis, Arthur Hamilton Tovey, James Richardson Spensley, Henry Murray Agnew, George Gardner, Andrew Walker Forrest, John Bruce Baird, and John Dorrington Batt. Dated May 5th: Robert Spears, John Frederick Broughton, Wyger Harmens, Guy Nasmith Mottram, and Jocelyn Langton Waller. Dated May 6th: John James Robertson, Charles Broderick Pearson, Hugh Hadfield Carleton, and Stephen Frederick Lynch. Dated May 7th: William Fraser, Ernest Goodwin Rawlinson, Daniel Kelly, Edward John Morton, Edwin Arthur Cleveland Swainson, Cecil Bennett, Charles Samson Thomson, John William Innes, Benjamin Jones, Robert Reid Pirrie, Leo Lane, Donald McFarlane Livingstone, John Wilson McCagie, John Brownlee Milne, Frank Barney Gorton Stableford, Thomas Geoffrey Elsworth, Gerald Sholto Douglas, John Pole Kitson, Patrick Joseph Murphy, Ernest Haines Walker, Mearns Alexander Milne, James Coutts, Anthony John McCreadie, George Miller, Robert MacNab Marshall, Harold Webb, Charles Leslie Grove Powell, James Muirhead, Joseph Bernard Dawson, Herbert Maughan Brown, Augustus Joseph Hickey, Richard Hubert Mercer, Robert Reid Duncan, Noel Instone, Andrew Serjeant McNeil, Ernest Theophilus Roberts, Ronald John Bruce, and Joseph Michael Morrissey. Dated May 8th: Philip Cyril Powter Cloake, George Norman, Charles Putnam Symonds, Archibald Guelph Holdsworth Smart, Henry François Vandermin, Albert William Duncan Coventon, and Ernest George Douglas Pineo. Dated May 9th: Percy Knowles Muspratt. Dated May 10th: Guy Alfred Wyon, Sydney Charles Hillyard Moberley, Denis Gratwicke Halsted, Charles Richard Verling-Brown, Oswin Shields, Henry Yellowlees, John Coffey, Austin Threlfall Nankivell, Richard Henry King, George Pollock, Robert McLaren Wishart, William Wallace Wood, Charles Harold Bloxsome, James Todd Dickson, John Melville Elliot, John Munro Campbell, John Buchanan, D'Arcy Irvine Hamilton, Harold Ernest Pierpoint Yorke, John Miller Young, Kenneth John Aveling, Leopold Ernest Valentine Every-Clayton, George Henry Russell, Sydney Waddell, John Dodds Marshall, Lionel Augustine Joseph Graham, Alexander Bruce Gordon, George Henry Keane, Stanley Victor Percy Pill, James Felton Hammond, William Arthur Anderson, Charles Reidy, John Maxwell Taylor, William Richard Morris, William Patrick Cooney, John Dixon, Frank Radcliffe, Alexander Church Brodie McMurtrie, William Stewart, Harry Tudor Newling, and Howard Ebenezer Collier. Dated May 11th: Harry Lawrence Attwater and Cecil Rutherford. Dated May 12th: George Stoddart, Sidney John Rowntree, James Alexander Wood Watts, Albert Victor Craig, Gordon Wilfred Ritchie Rudkin, Herbert Michael Moran, Clement Kirwan Sylvester, Archibald Ferguson, David Albert Hutcheson, Herbert Bates, Samuel Frederick Holloway, Frank Edward McGee, Edward Irving Pownoll Pellew, William Henry McKinstry, George Amos Varian, Peter Macdonald, William Edward Lindsey Fowler, William Guy Embleton Allen, and Frederick Travinor Rees. Dated May 13th: William James Valentine Curtain, Hugh Arthur Evans, and Howard Stein Millar. Dated May 14th: Percy Hall, Gerald Richard Courtenay Wilson, Richard Hamilton Ashwin, Benjamin Beamish, Alfred Benjamin Bateman, Harry Gordon Leigh Gilchrist, Thomas Mackinlay, William Ross, Arthur Gerald Welsford, William Hastings Hardy, Robert Devereux Mothersole, Colin Charles Gordon Gibson, Norman Gerald Meade, Arthur Daniel Clanchy, Aaron Simeon Cohen, Ignatius Patrick Kelly, Eric Bayley, John Edward Litton Alexander Turnley, John Thomas Armstrong, Berthold Somerville Taylor, and Ronald Tydd Herdman. Dated May 15th: John Hardwick Thornley, Robert Broom, Henry Brown Elton, John Douglas Wilkinson, Sol Cross, Burke Cuppage, Archibald Penrhyn Bowdler, David Thomas Crichton Frew, Alfred John Davoren, Edward Hamilton Bruce Fox, Hight Blundell, Albert Cameron, Andrew Wilson Cochrane, William Ashley Graves Cluffe, Robert Donald, Tom Henry Trevethan Frampton, Francis William Fawssett, James Edgar Hewlett, James McAvoy, Archibald Underwood Millar, Murdo Duncan Mackenzie, Andrew Brown McPherson, Arthur Robert Moore, Thomas McCririck, Willie Oliver, Victor John Ruttledge, Thomas Readman, Francis Riley, Herbert Douglas Smart, Daniel Stewart, David Taylor, William Wilson Wood, Herbert Kidson Wallace, John Wilson, James MacGregor Johnson, John Joseph Pentony, John Newton Martin, Alexander Farquhar, Leonard Owen Weinman, Gilbert Winter Dryland, George Habgood, George Hobson Thompson, Bentley Moore Hunter, Archibald Macmillan, Arthur Henry Thomas, William Francis Blewitt, Frederick George Beatty, Ivon Henry Skipwith Hawes, William Albert Wheeldon, Alfred Whitby, George Wheldale Stanley, and Henry Richard Rigby. Dated May 17th: William Bates, Robert Joseph Weidner, William R. Thomas, James Hamilton Fleming, William Reid, James Alexander MacLaren, William Deane, Alexander Joseph Dempsey, Thomas Bennett, Cecil Lionel Lakin, James William Hutton, Kenneth Gillies, Robert Grant, George William Bennett Waters, James Robert Burn, Burford Noel Norman, Sidney Herbert Booth, Murdo Maclean, Alexander Johnston Wilson, James Joseph Foley, Alfred Robert Sieveking, David Joseph Miller, William Wilson Jameson, John Erwood Forster, Penrose Lanyon Watkin-Williams, Samuel Edgar Martin, Alan Renata Green, Maurice Hereward Cane, Henry John MacKay Adams, Francis James Wheeler, John Carr Osburne, James Maxwell, Horace Bagster Wilson, Edgar James Tyrrell, William Alexander Milne, Joseph Dudley Benjafield, Reginald Power, Frank Davidson Johnson, Albert Ernest Henton, William Robert Honeyburne, William John Gilmour Henderson, Joseph Green, Wilbye Cooper, John Frankland West, Geoffrey Clarke, Lieutenant Alexander Barnett Brook, 4th Battalion, Seaforth Highlanders (Ross-shire Buffs, The Duke of Albany's), Territorial Force. Dated May 18th: John Mandall Coates, David Lawrie, and Cecil William Wilson. Dated May 19th: John Miles Chambers, Robert Hamilton, Herbert Walker Binks, William Doyle, John Anderson, Stanley Batchelor, Alfred Hollier Clough, George John Fraser, Harold Stanley Groves, Lancelot Raoul Lempriere, Robert McLean, George McNeill, Thomas Stanley Rippon, Noel Florentine Rowstron, Algernon Verling, Alexander Sweet Wilson, William

Frederick Rhodes, Norman Tattersall, William Leitrim Clements, Frederick Ernest Chapman, Trevor Hayman Fowler, and Giulio Hamilton.

The undermentioned officers of the Canadian Army Medical Corps to be Temporary Lieutenants: Dated May 10th: Major Norman King Wilson; Captains John Vassie Brown, Robert Werden Tennent, and John Jordon Field; and Lieutenants William Samuel Pickup, William James Morden Marcy, Frank Muir Walker, Herbert Wilfred Kerfoot, John George McLeod, Ernest Victor Frederick, Alfred Hope Macklin, Albert Franklin Mavety, Richard Earl Horkins, George Norman Uric, Ross Lester Shields, John Joseph Middleton, John LeKoy Mavety, James Willis Sutherland, Joseph Austin Evans, Murray Hulme Paterson, Frederick Johnson Livingston, George Chambers Anglin, John Nelson Humphrey, Keith Myrie Benoit Simon, James Franklin McLay, Richard Henry Bonnycastle, Lionel Montrose Dawson, Warren Augustus Dakin, James Edward Knox, Oswald John Day, Kenneth George McKenzie, Victor Howard McWilliams, Frederick James Colling, Henry Crassweller, Oliver William Colbeck, Frank Howard Wheeler, John Harold White, George Walker Manning Smith, Archibald Henderson, Thomas Oswald Hutton, and Charles Goldie Sutherland.

The undermentioned non-commissioned officers and men of the Canadian Army Medical Corps to be temporary Lieutenants:—Dated May 27th: Staff-Sergeants William James Deadman and Samuel Alexander Overend, Sergeants Leeming Anderson Carr and Frank Whiting Overholt, Lance-Corporal John Thomas Courtice, Privates John Chassels and Harry Arthur Cates. Dated May 28th: Staff-Sergeants Duncan Archie Fletcher, George Murray Shaw, and Charles Lennox Tulloch Arthur, Corporal John Victor Williams, Privates Halstead Graime Murray, Charles Havelock MacLean, Harry Adolph Sharman, Wellington Lekoy Pedlow, Otto Van Luven, and Ernest John de Beaupré. Dated May 29th: Sergeant-Major Alfred Clarence Brisco. Dated May 31st: Sergeant Major Walter James Bolt Brown, Sergeant John Francis Ryan, Corporals George Beatty Burwell and Everett Franklin Garfield Ward, Privates Frederick Walter Diamond, David Archibald Macfarlane, Hector McKenzie, Kenneth Earl Millan, Joseph Stokes Stewart, Norman Michael Glace, George Sampson Cronk, John Henry Fisher, Warren Fullerton Clark, John Howard Box, Arthur George Howson, Kenneth Lorne Mackinnon, and Harry Love Jarman.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

Lieutenant Thomas McEwen to be Captain.

The undermentioned Lieutenants (on probation) are confirmed in their rank: Robert McKinlay, Douglas Cran, John O. Reid, William B. Postlethwaite, Patrick C. MacRae, Robert P. S. Mason, Gilbert W. Rose, Neville H. Linzee, Frederick E. Fielden, William B. Cathcart, Raymond F. Pinson, Austin B. Clarke, Alfred T. Logan, James G. Wilson, and John F. Lyons.

TERRITORIAL FORCE.

Army Medical Service.

Major William Cochrane Murray, from 1st Lowland Field Ambulance, to be Deputy Assistant Director of Medical Services, Lowland (Reserve) Division.

Royal Army Medical Corps.

2nd East Anglian Field Ambulance: Lieutenant Frederick G. Sharpe resigns his commission on account of ill health.

3rd Home Counties Field Ambulance: Michael Arthur Curry to be Lieutenant.

South-Eastern Mounted Brigade Field Ambulance: Cholmondeley Webb to be Lieutenant.

2nd West Lancashire Field Ambulance: James Pearson Thierens to be Lieutenant.

2nd Northern General Hospital: James Blacklay Lockerbie to be Captain, whose services will be available on mobilisation.

1st Western General Hospital: Thomas Porter McMurray to be Captain, whose services will be available on mobilisation.

2nd Western General Hospital: Howard Buck to be Captain, whose services will be available on mobilisation. Edward Albert Williams to be Lieutenant.

1st Highland Field Ambulance: Captain Peter Howie to be temporary Major.

5th London Field Ambulance: Captain John Herbert Dixon to be temporary Major.

1st Northumbrian Field Ambulance: Edward Turton (late Captain, 5th (Cyclist) Battalion, The East Yorkshire Regiment), to be Major (temporary).

4th Southern General Hospital: Francis Edward Price to be Captain, whose services will be available on mobilisation.

1st South Midland Mounted Brigade Field Ambulance: Frank Smith to be Lieutenant.

1st Highland Field Ambulance: John Miller Chrystie to be Lieutenant.

3rd West Lancashire Field Ambulance: Bertram Whewell Hogarth (late Major, 5th Battalion, The King's Own (Royal Lancaster Regiment)) to be Major (temporary).

3rd Scottish General Hospital: David Watson to be Captain, whose services will be available on mobilisation.

5th Southern General Hospital: Captain John H. P. Fraser is seconded.

Notts and Derby Mounted Brigade Field Ambulance: Guy Witton Miller to be Lieutenant.

Yorkshire Mounted Brigade Field Ambulance: Charles Graham Meade to be Lieutenant.

1st London (City of London) Field Ambulance: Captain Thomas S. Worboys, from Attached to Units other than Medical Units, to be Captain (temporary). Captain Donald S. Sutherland, from Attached to Units other than Medical Units, to be Captain (temporary).

1st West Riding Field Ambulance: Charles Suffield Brown to be Lieutenant.

2nd West Riding Field Ambulance: Alexander Anderson to be Lieutenant.

3rd West Riding Field Ambulance: William Sneddon to be Lieutenant.

2nd London General Hospital: Captain Maynard Horne is seconded.

1st Northern General Hospital: William Arthur Slater (late Cadet, Durham University Contingent, Senior Division, Officers Training Corps), to be Lieutenant.

1st Scottish General Hospital: Clifford Thiselton Bell to be Captain, whose services will be available on mobilisation. Robert Richards to be Captain, whose services will be available on mobilisation.

1st Southern General Hospital: Thomas Wilson to be Captain, whose services will be available on mobilisation.

2nd London Sanitary Company: To be Lieutenants: James Mair and Alfred Carlton Williams.

Highland Casualty Clearing Station: James McLean Macfarlane to be Lieutenant.

2nd London Casualty Clearing Station: Andrew Tynan Swan to be Lieutenant.

Welsh Casualty Clearing Station: Major Charles R. White, from 2nd Welsh Field Ambulance, to be Lieutenant-Colonel (temporary). Captain Patrick J. McGinn, from 1st Welsh Field Ambulance, to be Captain. The undermentioned to be Lieutenants: Lieutenant John J. E. Biggs and Lieutenant Charles Nyhan, from Attached to Units other than Medical Units, and John Anderson.

Attached to Units other than Medical Units.—To be Majors: Surgeon-Captain James W. Cook, from 5th Battalion, The Lancashire Fusiliers, Captain John Leach, Palemon Best (late Captain, Cornwall (Duke of Cornwall's) Royal Garrison Artillery), and Captain Richard T. Turner. Captain George C. Jeaffreson resigns his commission on account of ill-health. Edmund Percival Isaacs Coke (late Captain, R.A.M.C., Territorial Force) to be Captain (temporary). To be Lieutenants: Charles Cooper Ling, John Wood, and John Ernest Ransford. Captain Lawrence C. V. Hardwicke is restored to the establishment.

DEATHS IN THE SERVICES.

Major Arthur Tregelles Pridham, I.M.S., suddenly, on June 6th. He joined the service in 1902, and in 1911–12 took part in operations in the Abor country (medal with clasp).

Surgeon-General Thomas Grainger, C.B., I.M.S., has been appointed an Honorary Surgeon to the King, vice Surgeon-General G. F. A. Harris, C.S.I., retired.

THE NATIONAL CARE OF MATERNITY.—On June 11th a deputation from the Women's Coöperative Guild waited on Mr. Walter Long, President of the Local Government Board, to urge immediate legislation dealing with the care of maternity and infancy. Mr. Long said that he would be glad to introduce legislation making the Notification of Births Act compulsory all over the country.

THE LATE DR. J. P. CAMERON.—The death of Dr. J. P. Cameron is announced as having taken place on Savage Island on March 13th, where he was medical officer under the New Zealand Government. Dr. Cameron, who was 29 years old, was a Scotsman, and was educated at Aberdeen University, where he graduated as M.B., C.M. in 1910.

NEW BUILDINGS AT THE DURHAM COUNTY HOSPITAL.—On June 12th a new operating theatre and a nurses' hostel were opened in connexion with the Durham County Hospital by the Earl of Durham. Only £560 of the £5320 which the buildings have cost remain to be raised, the Ven. Archdeacon Watkins and his wife having given £1000 towards the theatre, and Miss Margaret Brown, of Durham, having made herself responsible for the hostel.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census, 8049 births and 4697 deaths were registered during the week ended Saturday, June 12th. The annual rate of mortality, which had been 15·4, 13·7, and 13·9 per 1000 in the three preceding weeks, fell in the week under notice to 13·5 per 1000 of their aggregate population, estimated at 18,136,180 persons at the middle of last year. During the first ten weeks of the current quarter the mean annual death-rate in these towns averaged 16·0, against a corresponding rate of 16·3 per 1000 in the metropolis. The annual death-rate last week ranged from 4·4 in Hastings, 6·6 in Eastbourne, 6·8 in Enfield, 7·0 in Hornsey, and 7·6 in Newport (Mon.), to 20·1 in Blackpool, 21·1 in Bury, 23·5 in Cambridge, 24·3 in Middlesbrough, and 29·1 in Gillingham.

The 4697 deaths from all causes were 150 fewer than the number in the previous week, and included 449 which were referred to the principal epidemic diseases, against 439 and 489 in the two preceding weeks. Of these 449 deaths, 215 resulted from measles, 90 from infantile diarrhœal diseases, 75 from whooping-cough, 33 from diphtheria, 29 from scarlet fever, and 7 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 1·3, or 0·1 per 1000 less than in the previous week. The deaths attributed to measles, which had been 309, 221, and 239, in the three preceding weeks, fell to 215 last week, and caused the highest annual death-rates of 2·3 in Wigan, 2·4 in Sunderland, 2·5 in Derby, 3·3 in Sheffield, 4·5 in West Bromwich, and 6·2 in Middlesbrough. The deaths of infants (under 2 years) referred to diarrhœa and enteritis, which had been 70, 64, and 75 in the three preceding weeks, further rose to 90 last week, and included 21 in London, 6 each in Liverpool and Manchester, and 4 each in West Ham and Birmingham. The fatal cases of whooping-cough, which had been 137, 90, and 90 in the three preceding weeks, further fell to 75 last week, of which 16 belonged to London and 4 each to Liverpool, Wigan, Manchester, Leeds, and Sheffield. The deaths attributed to diphtheria, which had been 51, 31, and 50 in the three preceding weeks, fell to 33 last week, and included 9 in London, and 2 each in Birkenhead, Liverpool, Bradford, and Sheffield. The deaths referred to scarlet fever, which had been 20, 21, and 22 in the three preceding weeks, further rose to 29 last week, of which 5 were registered in London, 3 each in Bradford and Sheffield, and 2 each in Tottenham, Liverpool, Manchester, and Salford. The fatal cases of enteric fever, which had been 15, 11, and 13 in the three preceding weeks, fell to 7 last week, of which 3 occurred in Manchester.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had been 2286, 2252, and 2267 at the end of the three preceding weeks, had increased to 2336 on Saturday last; 330 new cases were admitted during the week, against 320, 257, and 327 in the three preceding weeks. These hospitals also contained on Saturday last 1058 cases of diphtheria, 91 of measles, 49 of enteric fever, 12 of whooping-cough, and 1 of small-pox. The 1103 deaths from all causes in London were 48 fewer than the number in the previous week, and corresponded to an annual death-rate of 12·7 per 1000. The deaths referred to diseases of the respiratory system, which had steadily declined from 469 to 181 in the eight preceding weeks, further fell to 165 last week, but were 22 in excess of the number in the corresponding week of last year.

Of the 4697 deaths from all causes in the 96 towns, 279 resulted from different forms of violence, and 401 were the subject of coroners' inquests, while 1394 occurred in public institutions. The causes of 34, or 0·7 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. Al the causes of death were duly certified in London and in its 14 suburban districts, in Manchester, Sheffield, Bristol, Bradford, Hull, and in 57 other smaller towns. Of the 34 uncertified causes, 9 were registered in Birmingham, 3 in Liverpool, and 2 each in Gillingham, St. Helens, Preston, South Shields, and Gateshead.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns, with an aggregate population estimated at 2,345,500 persons at the middle of this year, 1123 births and 806 deaths were registered during the week ended Saturday, June 12th. The annual rate of mortality in these towns, which had been 16·1, 18·2, and 18·9 per 1000 in the three preceding weeks, fell to 17·9 per 1000 in the week under notice. During the first ten weeks of the current quarter the mean annual death-rate in these towns averaged 18·8, against 16·0 per 1000 in the large English towns. Among the several towns the death-rate last week ranged from 7·1 in Kilmarnock, 10·0 in Motherwell, and 12·4 in Ayr, to 20·9 in Dundee, 22·0 in Leith, and 23·7 in Aberdeen.

The 806 deaths from all causes were 42 fewer than in the previous week, and included 148 which were referred to the principal epidemic diseases, against numbers increasing from 90 to 147 in the three preceding weeks. Of these 148 deaths, 80 resulted from measles, 40 from whooping-cough, 12 each from scarlet fever and infantile diarrhœal diseases, and 4 from diphtheria, but not one from enteric fever or from small-pox. The mean annual death-rate from these diseases was equal to 3·3, against 1·3 per 1000 in the large English towns. The deaths attributed to measles, which had been 36, 72, and 85 in the three preceding weeks, fell to 80 last week, and included 52 in Glasgow, 17 in Aberdeen, and 3 in Edinburgh. The deaths referred to whooping-cough, which had been 40, 43, and 40 in the three preceding weeks, were again 40 last week, of which 23 occurred in Glasgow, 5 in Edinburgh, and 3 in Dundee. The fatal cases of scarlet fever, which had been 6, 5, and 7 in the three preceding weeks, further rose to 12 last week, and comprised 6 in Glasgow, and 3 each in Edinburgh and Aberdeen. The deaths of infants (under 2 years), attributed to diarrhœa and enteritis, which had been 5, 15, and 10 in the three preceding weeks, rose to 12 last week, and included 5 in Glasgow, 3 in Dundee, and 2 in Aberdeen. The 4 fatal cases of diphtheria were 4 below the average in the earlier weeks of the quarter, and were all registered in Glasgow.

The deaths referred to diseases of the respiratory system, which had been 117, 141, and 145 in the three preceding weeks, fell to 126 in the week under notice, but were 31 in excess of the number registered in the corresponding week of last year. The deaths attributed to different forms of violence numbered 25, against 26 and 35 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the 27 town districts of Ireland, with an aggregate population estimated at 1,212,380 persons at the middle of this year, 536 births and 357 deaths were registered during the week ended Saturday, June 12th. The annual rate of mortality in these towns, which had been 18·3, 16·4, and 17·0 per 1000 in the three preceding weeks, fell to 15·4 per 1000 in the week under notice. During the first ten weeks of the current quarter the mean annual death-rate in these towns averaged 19·3, against corresponding rates of 16·0 and 18·8 per 1000 in the English and Scotch towns respectively. The annual death-rate last week was equal to 17·0 in Dublin (against 12·7 in London and 19·1 in Glasgow), 13·7 in Belfast, 15·6 in Cork, 21·5 in Londonderry, 19·0 in Limerick, and 11·4 in Waterford, while in the 21 smaller towns the mean rate was 14·0 per 1000.

The 357 deaths from all causes were 39 fewer than the number in the previous week, and included 21 which were referred to the principal epidemic diseases, against 20 and 27 in the two preceding weeks. Of these 21 deaths, 9 resulted from whooping-cough, 7 from measles, 2 each from diphtheria and infantile diarrhœal diseases, and 1 from scarlet fever, but not one from enteric fever or from small-pox. The mean annual death-rate from these diseases was equal to 0·9, against corresponding rates of 1·3 and 3·3 per 1000 in the English and Scotch towns respectively. The deaths attributed to whooping-cough, which had been 5, 3, and 5 in the three preceding weeks, further rose to 9 last week, and included 3 in Londonderry, and 2 each in Dublin and Cork. The deaths referred to measles, which had been 9, 10, and 3 in the three preceding weeks, rose to 7 last week, of which 5 occurred in Belfast. The 2 deaths from diphtheria were registered in Dublin, those from infantile diarrhœa in Belfast and Queenstown, and the fatal case of scarlet fever in Belfast.

The deaths referred to diseases of the respiratory system, which had been 93, 63, and 56 in the three preceding weeks, rose to 64 in the week under notice. Of the 357 deaths from all causes, 107, or 30 per cent., occurred in public institutions, and 3 resulted from different forms of violence. The causes of 8, or 2·2 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 96 English towns the proportion of uncertified causes did not exceed 0·7 per cent.

A FREE TUBERCULOSIS DISPENSARY AT ST. BARTHOLOMEW'S HOSPITAL.

—A dispensary has been established at St. Bartholomew's Hospital, at which residents in the City or non-resident workers suffering from any form of tuberculosis may receive advice and treatment free. The dispensary, which is the outcome of an arrangement between the City Corporation and the hospital, is open between the hours of 12.30 and 2.30 P.M. on Tuesdays and Fridays Special cases receive attention on Thursday evenings.

Correspondence.

"Audi alteram partem."

TYPHUS FEVER, LICE, AND THE WAR: A SUGGESTIVE FACT.

To the Editor of THE LANCET.

SIR,—In the annotation in your issue of June 12th entitled "The Spread of Typhus Fever by Lice," you mention a circular issued by the German Imperial Board of Health which advocates the use of a preparation containing sabadilla vinegar. This at once recalled to my mind a statement contained in a letter which I received in January last from Mr. James Flind, the administrator of the La Guaira and Caracas Railway, Venezuela. He told me that during the year 1913 no less than 258 tons of sabadilla seed were shipped from La Guaira to Germany, the shipment in former years averaging something over 100 tons per annum. He says, further, "Owing to the war, the sabadilla is now being shipped, but in smaller quantities, to the United States, and we have never shipped any of it to England. The uses for this seed are not fully known here, but it is thought that it is used in the curing of hides and as a medicine for horses and animals." In the light of your note it would certainly seem that we have here additional proof, if any were needed, that Germany had carefully prepared for the war which she intended to bring about as soon as it suited her convenience.

The most important active principle of sabadilla is, of course, veratrine, which is used to some extent in veterinary practice as a parasiticide, and also enters into the composition of a preparation sometimes employed for treating pediculosis of the scalp.

It must be remembered that veratrine is a very poisonous substance, and preparations containing it must be used with caution. Doubtless the German Imperial Board of Health pay due attention to this point in their circular.

I am, Sir, yours faithfully,

ANDREW BALFOUR.

Wellcome Bureau of Scientific Research, London, W., June 14th, 1915.

THE INCIDENCE OF PLAGUE IN EUROPE.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Nov. 14th, 1914, I put forward some contentions with regard to the incidence of plague in Europe. I attempted to explain why it is that whereas formerly great epidemics were rife, nowadays no such occurrences take place.

First, I endeavoured to establish the fact that the brown rat having replaced the black was to a large extent the reason for the changed condition of affairs. The disappearance of plague was coincident with the introduction of the brown rat; and in the seaport towns where the black rat is still largely prevalent small epidemics do occur.

Secondly, I tried to find an explanation of this, and I concluded that the reason was to be found in the different bionomics of the two species of rat.

Thirdly, I tried to show that whatever danger there was to man from epizootics among brown rats, the danger was much minimised in the summer months. I gave certain figures in support of this, and I concluded that the reason for what I took to be a fact was that the rats, being widely dispersed over the countryside in summer, were, *pari passu* with that dispersal, less exposed to infection, and therefore to epizootics.

Now Dr. R. St. J. Brooks, writing in THE LANCET of Dec. 19th, 1914 (which has just come to my hand in a corner of Malaya, May 4th, 1915), challenges the figures by which I tried to prove that rats were less liable to epizootics in the summer. He says that, as a matter of fact, an average flea-rate per rat of 2·7 produced an epizootic of 11 per cent. in one parish in England (I said that a flea-rate of 1 per rat had done so, having misinterpreted Martin and Rowland's original paper, or not seen the figure that Dr. Brooks gives); and not only does he say that I was wrong in that, but that I had compared my figures for that parish with something that was not strictly comparable—to wit, the incidence of plague among 15,000 rats, which had a flea-rate of 4·5, caught later in a great many parishes.

I do not know why these figures are not comparable. I contend that if a flea-rate of 2·7 (admitting the new figure) causes an epizootic of 11 per cent. among 123 rats in a town, village, or hamlet, then a flea-rate of 4·5 should cause a much greater epizootic than 0·2 per cent. among any 15,000 rats one likes to examine. Of course, it is possible if 15,000 more rats had been examined a heavy infection would have been found among them (this is only admitting that there is an "error of random sampling"); all I am concerned with is the fact that among 15,000 rats which were examined, with an average of 4·5 fleas per rat, there was no heavy infection, and I want to know the reason why.

As a matter of fact, if Dr. Brooks still does not consider these figures comparable I will give him some parish for parish figures.

—	Parish.	Plague.	Flea-rate.
Martin and Rowland (Winter, 1910).	?	11% epizootic.	2·7
Strickland and Merriman (Summer, 1911).	Nacton.	Nil.	6·5
	Tuddenham.	,,	6·0
	Tattingstone.	,,	5·3
	Hollesley.	,,	5·1

The difference in these figures for neighbouring parishes all in the infected area for winter and summer is striking and needs some explanation, and I think I have hit on the right and natural one when I say it is due to the dispersal of the rats over the country-side in summer.

Dr. Brooks finally says my "assumption is erroneous." It is not quite clear from his letter whether he refers only to the last or to all three of my contentions. The reader is rather led to infer that one of my figures having been given wrongly the whole thesis was upset. As a matter of fact, his criticism was directed only against my third contention, and I think I have shown that it was captious and inconsequent. After all, if Dr. Brooks admits the dispersal of the rat population in the summer time, would he not expect a lessened incidence of plague among them? Even if Dr. Brooks will not admit the lessened incidence of plague in summer as compared with winter, will he not make it clear whether, while recognising the lessened incidence of plague nowadays as compared with the past, he disputes my first two contentions: (1) that it has been due to the replacement of the black rat by the brown;

and (2) that the reason for this is found in the difference of bionomics in the two species of rat?

Until Dr. Brooks sets up some thesis more reasonable than that of my three contentions I hold that mine may stand.

I am, Sir, yours faithfully,

C. STRICKLAND,
Travelling Medical Entomologist, Federated Malay States Government.
Malaria Bureau, Kuala Lumpur, F.M.S., May 5th, 1915.

DIAGNOSIS OF TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—The article by Dr. G. H. Dart on this subject in THE LANCET of June 12th must have been of great interest to all those who are doing tuberculosis work, and who are, in consequence, examining numbers of contacts daily. I think one and all will agree with Dr. Dart with regard to the great difficulty in many cases of making a definite diagnosis, especially so in childhood, at the first examination. I have a special opportunity of watching these difficult and anomalous cases at the Kensal House Open-air School, which is under my medical supervision, and to which this particular class of case is admissible.

It seems to me, from a clinician's standpoint, almost impossible to lay down any hard-and-fast rules with regard to symptoms, physical signs, or special tests (such as Moro's, von Pirquet, &c.), as to which case should be classed as "definite" and which "suspect," as there are never two cases exactly alike; consequently each case must be judged, so to speak, on its own merits. Then, again, in many cases the final diagnosis can only be made after having had the child under observation in an open-air school or some such institution for some considerable time.

It is obvious that no scheme for dealing with tuberculosis can be complete without an open-air school.—I am, Sir, yours faithfully,

R. SEPTIMUS WALKER,
Medical Officer, Paddington Tuberculosis Dispensary.
June 15th, 1915.

PULSUS ALTERNANS.

To the Editor of THE LANCET.

SIR,—Dr. J. Davenport Windle's comments in THE LANCET of June 12th on one of the tracings attached to my paper on pulsus alternans, which appeared in your issue of May 29th, are of very considerable interest, and, as I well know, the subject is one on which he speaks with special authority. Nevertheless, I think I can assure him that the tracing was not produced in the way he suggests. The patient was not the subject of laboured breathing, and in whatever position she was placed a tracing some 12 or 14 inches in length exhibited throughout the perfectly regular alternation which is displayed in the short example. Perhaps it may be well to add that the tracing was taken not through the agency of a tambour, but directly by Dudgeon's sphygmograph. Dr. Windle's second point is of great importance, as it proposes a method of distinguishing between a pulsus alternans which is of serious import and one which is free from anxious significance. But is he not a little severe in challenging my tracing as a true picture of pulsus alternans because of the absence of a feature which, as he himself says, has not hitherto been mentioned as one of the characteristics of this condition? If the tracing conforms to the recognised descriptions it may surely claim the corresponding title, though the new test proposed by Dr. Windle may be a possible method of appraising its exact prognostic significance. The measurements on which he insists must obviously receive the attention of all who are interested in graphic methods, and on this particular issue it would be of interest to have his opinion on my Fig. 1 (*a*) where the downstroke of the weaker beat is definitely shorter than that of the stronger. This tracing would therefore seem to satisfy the new condition which he presents as essential to a true pulsus alternans. But both Fig. 1 (*a*) and Fig. 6 (*a*) are tracings taken from one and the same patient.

May I be allowed a word in recognition of Sir James Goodhart's interesting letter in your issue of June 5th? The question he raises of the relative values of sphygmometric and sphygmographic records does not seem to have engaged the attention it merits. In THE LANCET of Feb. 18th, 1911, I tried to show that the sphygmometer can at the best relate only to level or height of pressure, while for information relative to the duration of pressure and to the fashion of its decline an appeal must be made to the sphygmograph. On the other hand, at least such was my claim, the sphygmograph makes no announcement of the height to which the pressure rises, and therefore the terms "high pressure" and "low pressure," as commonly applied to its readings, are unjustified and misleading. I am, Sir, yours faithfully,

June 14th, 1915. C. O. HAWTHORNE.

THE GRATUITOUS TREATMENT OF DEPENDENTS.

To the Editor of THE LANCET.

SIR,—I was glad to see the letter of "M.D." in THE LANCET last week. At the beginning of the war, when this was proposed, no one realised what the nation was in for, and the suggestion was quite fitting and proper. Now that the matter has grown to such dimensions it is becoming a burden. The whole service should be properly arranged with fitting remuneration. As it is, half my patients now come under this category, and soon some of us on whom an unfair share of this work happens to fall will find themselves unable to continue. Other State work is remunerated, why not this?

I am, Sir, yours faithfully,

June 14th, 1915. SATIS.

*** By the same post a letter from a correspondent in Vancouver reaches us saying: "At the commencement of the war the Medical Society of Victoria, British Columbia, decided that wives and children of soldiers on active service should be attended gratuitously, but owing to great abuse of the members' services that resolution has now been rescinded."—ED. L.

LITERARY INTELLIGENCE.—Messrs. Henry Frowde and Hodder and Stoughton announce the publication within the next few weeks of a series of Oxford War Primers of Medicine and Surgery, to be written mainly by medical officers in the naval and military services who have had special experience of the subjects. The series will be issued under the general editorship of Lieutenant-Colonel D'Arcy Power, R.A.M.C.(T.).

DEATH OF AN ABERDEEN MEDICAL MAN.—Dr. J. E. Fowler, a well-known medical practitioner in the Woodside district of Aberdeen, died on June 11th in the seventy-sixth year of his age. The whole of his professional life had been spent in the district where he lived, and he took a keen interest in public affairs. When Woodside was a separate burgh he held the office of Provost.

The War.

THE CASUALTY LIST.

THE names of the following medical officers have appeared in the casualty lists since our last issue:—

Killed: Second Lieutenant A. Clifford Clifford, 3rd Dragoon Guards, was a Guy's man and M.B. Cantab.; Lieutenant-Colonel J. W. Jessop, 4th Battalion Leicestershire Regiment (T.F.), of Horncastle, Lincolnshire, was also a medical man (M.R.C.S., L.R.C.P.).

Died of wounds: Surgeon T. L. G. Stewart, R.N.; Lieutenant D. G. Watson, R.A.M.C.

Wounded: Captain R. M. Dickson, R.A.M.C., Major G. H. L. Hammerton, Yorks Mounted Brigade F.A. (T.F.), Captain H. L. Gregory, attached 7th Middlesex Regiment (T.F.), Lieutenant G. Bailey, 1st East Lancashire F.A. (T.F.), Major T. Holt, attached 6th Lancashire Fusiliers (T.F.), Captain H. Henry, attached 4th East Lancashire Regiment (T.F.), all of the R.A.M.C. (T.F.); Surgeon R. Creasy, Divisional F.A., and Surgeon W. Bradbury, Medical Unit, both of the R.N.; Captain R. Knowles, I.M.S., Lieutenant-Colonel W. R. Pearless, N.Z. Army Medical Corps.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following must be added to the sons of medical men who have fallen in the war: Second Lieutenant G. F. Blacker, only son of Dr. A. E. Blacker, of Clifton; Lieutenant-Commander R. S. Parsons, R.N., fifth son of Dr. Charles Parsons, of Tunbridge Wells; Second Lieutenant T. A. Heywood, only son of Dr. T. W. Heywood, of Darwen; Major E. L. Baddeley, eldest son of the late Dr. Baddeley, of Whalley; Lieutenant W. A. Leland, eldest son of Dr. Alfred Leland, of Kensington; Lieutenant E. F. Thorburn, youngest and only surviving son of Professor William Thorburn, of Manchester; Second Lieutenant A. J. I. Donald, eldest son of Dr. Archibald Donald, of Manchester.

THE BRITISH CASUALTIES.

Mr. Asquith has now given to the House of Commons statistics regarding the casualties amongst officers and men of the Royal Navy, Royal Marines, and Royal Naval Division to May 31st. The figures include the casualties resulting from the loss of the *Bulwark* and other accidental losses. The figures are as follows:—

	Officers.	Men.
Killed	549	7,696
Wounded	181	2,262
Missing	74	2,785
Total...	804	12,743

This makes the total of casualties in the Senior Service of all ranks 13,547.

In the House of Commons on June 9th Mr. Asquith stated that our total casualties in the French and Mediterranean Expeditionary Forces up to the end of May (i.e., for ten months) amounted to 10,955 officers and 247,114 non-commissioned officers and men, killed, wounded, and missing, the figures not including the losses among the naval forces, that is, not including the figures given above. Of the total losses in the army the killed numbered 3327 officers and 47,015 non-commissioned officers and men. In no previous war of which we have accurate statistical records has there been so great a loss of life in a similar period of time, and the figures dealing with the army can be submitted to certain rough comparisons.

Throughout the Crimean campaign the British losses were 2755 killed and 12,094 wounded; and our Allies lost 8250 killed and had 39,868 wounded. In the Franco-German War of 1870–71, during the whole period from July to April, the Germans had 17,570 killed and 96,189 wounded. In the Russo-Turkish War of 1877 the Russians lost 32,780 killed and had 71,268 wounded. In the South African War there were 5256 killed in action and 26,286 wounded. In the absence of authoritative statistics as to the numbers of men engaged, it is impossible to compare the relative losses by wounds and by death in the present campaign with previous experiences. At Waterloo the British killed in action amounted to 4·85 per cent. of the troops engaged; the wounded were 16·25 and the missing 2·19 per cent. In the Crimea our losses were 2·81 per cent. killed and 12·35 per cent. wounded. In the Franco-German War the German troops lost 1·97 per cent. killed and 10·83 per cent. by wounds. In the South African War we lost 1·25 per cent. of the force in battle and 2·46 per cent. by disease.

In an attempt to compare the conditions of the present campaign with those of previous wars, in regard to the amount of injury done by one force to the other, the points that must seem the most noticeable are the immense number of combatants, the great extent of the battle lines, the continuous character of the fighting, and the use by each side of arms of great precision, both small arms and artillery. Never before has there been such a concurrence of factors towards the production of an enormous loss of life and limb, and in these circumstances there is little in past precedent to guide us in making any estimates or deductions. We can, certainly, compare the relative proportions of the killed and wounded (including in the latter category the missing, who may be killed or may be prisoners) in the present war with the proportions that have prevailed in the past, and the figures are of better omen than would be expected. The ratio is as 1 killed to 4·25 wounded and missing, or 23·5 per cent. In the Crimea the ratio of killed to the number wounded and missing was as 1 to 4·4, or 22·7 per cent.; in the Franco-German War of 1870 it was as 1 to 5·70, or 17·53 per cent.; in the Russo-Turkish War it was as 1 to 2·17, or 45·98 per cent.; in South Africa it was as 1 to 5, or 20 per cent. The proportion of killed to wounded has therefore so far been similar to, but slightly in excess of, our experiences in the Crimea and South Africa.

Among officers, the proportion of killed to wounded has been in the present war much higher than in the case of the men—namely, as 1 to 2·3, or 43·61 per cent.; it forms our main anxiety. It is said, we do not know with what degree of truth or how widely it is applicable, that our opponents are not led into battle, but that their officers exhort them from the rear rank, and indeed sometimes have to apply some force to make their men advance. This may be mere gossip, or arguing from the particular to the general, and what has certainly taken place in some areas of fighting in the German ranks may have been assumed to be occurring universally. At any rate, there neither is, nor ever has been, any doubt that the British officer (in the words of the drill book) "will lead his company in the assault"; he takes a greater risk, but he knows his men are with him.

TEMPORARY MEDICAL COMMISSIONS AND COMPENSATION.

A medical correspondent asks us whether any arrangements are made, either by the Government, the insurance companies, or the medical profession, to give compensation to any medical man who may either be killed or suffer the loss of a limb or other organ in the war. The gentleman in question had been passed for life assurance by a leading company, but when they learnt that he had applied for a temporary commission in the R.A.M.C. they declined the risk absolutely. As we have had many similar queries, it seems likely that a general statement will be of widespread service. So far as the medical profession is concerned no provision for the granting of such compensation has been made.

As to insurance offices, it is a purely individual matter between the individual candidate and the individual insurance company. It seems quite likely that while perhaps some arrangement could be arrived at between old policy-holders and their company, insurance offices would for the most part decline to take new proposals from those who contemplate going to the front. In any case there would probably be additional premiums for war risk.

With regard to the Government, we are informed by the military authorities that officers (under the rank of colonel) of the Special Reserve of Officers, the Territorial Forces, and those holding only temporary commissions for the purposes of the present war, all stand on exactly the same footing as officers of the Regular Army with regard to compensation for themselves in case of wounds, disease, injury, or disablement consequent on duty, and pensions and compassionate allowances for their families and dependents in case of death. What these gratuities, pensions, and compassionate allowances are under varying conditions and for different ranks in the service can be learnt from the Royal Warrant for Pay, Appointment, Promotion, and Non-effective Pay in the Army, 1914 (Sections X. and XI., Paras. 639 to 680), to be obtained, price 6*d*., either directly or through any bookseller, from Wyman and Sons, Limited, London and Cardiff; H.M. Stationery Office, Edinburgh; and E. Ponsonby, Limited, Dublin.

WAR SERVICE AND THE BRIGHTON MEDICAL PROFESSION.

The Brighton Division of the British Medical Association has adopted the following scheme for assisting medical men who are rendering medical war service. A copy of the scheme has been sent to all practitioners in the area, who are invited to sign the following declaration and return it to Mr. E. Burchell, the honorary secretary:—

I am willing, during the conditions of emergency caused by the war, to attend, on the terms and conditions formulated below, the patients of other practitioners in this district who are engaged on military duties. I will not attend on my own behalf any patient of a practitioner for whom I have acted under this agreement within one year from the termination of that practitioner's military duties. I agree to accept half of all fees earned as payment for the services I render, or, in the cases of insured persons, a portion of half the quarterly cheque received from the Insurance Committee, which shall be determined by the number of insured persons attended by me during that quarter. If I wish to withdraw from this undertaking, I will give the Hon. Sec. of the Executive Committee, Brighton Division, B.M.A., not less than 14 days' notice. I am willing to undertake: (1) Private practice; (2) practice under the Insurance Act; (3) Poor-law practice. (4) Although unable to undertake work in any of the kinds of practice enumerated, I agree to be bound by the principles of the scheme. [The signatory deletes those kinds of practice he is not willing to undertake.]

From the signatures to this undertaking a list of all practitioners willing to attend patients of absentees on war service is drawn up, and any practitioner leaving on military service may select by agreement with them any or all of the practitioners on the list to attend his patients, it being understood, of course, that only those willing to attend Insurance Act or Poor-law patients shall be called upon to do so. A circular letter, of which the following is the approved form, is sent to all the patients whose names have been on the books of the doctor for the previous two years and who, there is no reason to suppose, have since become patients of another doctor:—

Dr. X desires to inform you that, having undertaken military duties, he will be absent from his practice after ....., 191.... By mutual arrangement, the doctors named below have undertaken to attend his patients during his absence. To assist in carrying out this arrangement, you are particularly requested to inform the doctor whose services you require that Dr. X is your usual medical attendant. Those doctors whose names are marked with an asterisk are willing to attend patients under the Insurance Act, and insured persons on Dr. X's list calling in another doctor will remain on that doctor's list until the return of Dr. X.

The patients on receipt of this circular will select from the list appended thereto by their own medical attendant one of the doctors named thereon, with limitations already specified as to the kind of practice. The payment to the substitute doctor in the case of private patients shall be half of all fees earned, the fees being those usually charged by the absent practitioner. In Insurance Act cases one-half of the quarterly cheque from the Insurance Committee shall be retained by the absent doctor, the other half being divided pro rata among those doctors who have attended his insurance patients. The accounts for medical attendance undertaken on behalf of the military medical man shall be sent out by him or by some one appointed by him, and it is urged that he leave power of attorney with some person to act for him during his absence. All sorts of professional services, including consultations, inquests, court fees, and so on, rendered in consequence of such introduction to a military medical man's patients are to be regarded as services rendered on his behalf. Out-of-pocket expenses shall be divided equally between the absent doctor and his substitute, who must keep full records of all attendances and prescriptions given and forward them within 14 days after each quarter day to the absent doctor or his nominee. On returning to practice from military duties the medical man shall make within six months all payments due to those doctors who have acted as his substitutes.

NEW MILITARY HOSPITALS.—The Newcastle City Lunatic Asylum at Gosforth is being transformed into a military hospital. Some 400 wounded men are now being accommodated there, and when the work is complete it will be able to take 1040. Colonel Prescott, R.A.M.C., is in command.—Highbury, Moor Green, the residence of the late Right Hon. Joseph Chamberlain, now a hospital under the control of the 1st Southern General Hospital, received its first batch of 40 wounded men recently. The hospital is to accommodate 145. It is staffed entirely by the Voluntary Aid Detachment from the 30th Worcestershire Division.—The war hospital committee of the Stoke board of guardians has

recommended the board to offer to the War Office the female mental wards of their infirmary besides the wards already offered and accepted, with a view to bringing up the hospital accommodation to 500 and meet the problems of staffing and stores. As it was shown that ample accommodation was available elsewhere for the present occupants of the wards the scheme was approved.—The Welsh Metropolitan Military Hospital, with accommodation for 900, was formally opened at the Cardiff Mental Hospital on June 9th. The hospital was handed over rent free, the staff being retained, with military commissions, under the same conditions of pay and service as heretofore. The commandant is Lieutenant-Colonel E. Goodall, the former medical superintendent.—Windlesham Moor, Surrey, providing accommodation for 40 wounded men, has been opened as a military hospital, the owner, Mr. L. B. Peters, having equipped it for that purpose.—A large first-line military hospital is to be erected by the Scottish Branch of the Red Cross Society in Bellahouston Park, Glasgow. It is to contain 700 beds.

WOUNDED ALLIES RELIEF COMMITTEE.—The committee has appointed as Médecin-Chef to the Hôpital Militaire Anglais, Limoges, Mr. C. E. S. Jackson, honorary surgeon of the West Norfolk and Lynn Hospital, and senior assistant medical officer to the Queen Mary's Hospital for Children, Carshalton. The position of Médecin-Chef at the Hôpital Militaire 27a, Dieppe, has been accepted by Captain Owen Paget, of the Australian Army Medical Corps, medical officer of health, Fremantle, Australia. These hospitals, which together treat an average of 300 cases weekly, are entirely supported by the committee and have the approval of the French military authorities.

The doctor at present in charge of the Wounded Allies Relief Committee's typhus hospital at Kragujevac, Serbia, writes as follows: "I think I have succeeded in making the best use of an old artillery stable. It is nothing more or less than a stable which they have given us for our hospital. Everything has been concreted and whitewashed; the sanitary arrangements are very satisfactory; we have water close to the hospital for baths and laundry. In fact, the Wounded Allies Relief Committee's hospital is the cleanest and the smartest hospital at Kragujevac. With the 12 nurses whom you have sent out the nursing staff is more than adequate. The hospital will become a surgical one as soon as possible—that is to say, we are awaiting the surgical instruments to start work. All the staff are quite well and are working with courage and goodwill. The only thing that troubles us is that we have no English papers." The hospital accommodates 100 patients, and Colonel Joseph A'Hearne recently left England to take up the position of medical superintendent. In the meantime the medical work is being admirably performed by two Belgian doctors.

THE BRITISH FARMERS' RED CROSS FUND.—A further sum of £5000 has been sent by the British Farmers' Red Cross Society to the British Red Cross to pay for the British Farmers' Enteric Hospital at Calais. This makes £8000 in all. The Fund has also sent two complete hospitals to Serbia. It is intended to appropriate the next £20,000 collected for the wounded among the British forces at the Dardanelles.

SCHOOLS AS MILITARY HOSPITALS.—From the annual report of the Board of Education it appears that by the month of April the military authorities had taken over for hospital purposes 60 elementary and 17 secondary schools, 8 training colleges, and 2 universities. In addition, there were in occupation as billets, stores, &c., 178 elementary and 18 secondary schools, 14 technical schools, and 2 training colleges. In the great majority of cases the loss of the school premises has not been allowed to stop the work of the school. Local authorities, managers, and teachers by their efforts have succeeded in minimising the results of this interruption.

CORSTORPHINE HOSPITAL BEDS AT ROUEN AND BOULOGNE.—As a result of the appeal for funds in the parish of Corstorphine the sum of £234 12*s.* 6*d.* has been collected, and it has been decided to endow two beds—one at Rouen and another at Boulogne—the surplus funds being reserved for administration by the Edinburgh Committee of the Red Cross Association.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—An ordinary meeting of the Council was held on June 10th, Sir Frederic Eve, senior Vice-President, being in the chair. The secretary reported that the President left England on May 29th to carry out duties assigned to him by the Admiralty, and would probably be absent for about three weeks. A letter was read from Mr. C. A. Ballance stating that he was going to Malta by request of the War Office and asking the Council to sanction his absence from their meetings. Leave of absence was given. A report was read from the Board of Examiners in Anatomy and Physiology for the Fellowship stating that at the recent examination 42 candidates were examined, of whom 14 were approved and 28 rejected. A report was read from the Court of Examiners stating that at the recent examination for the Fellowship 24 candidates were examined, of whom 8 were approved and 16 rejected. The following are the names and medical schools of the successful candidates:—

Shridhar Bheekajee Gadgil, B.A. Bombay, M.R.C.S., L.R.C.P., Bombay University and University College Hospital; Robert Edward Collins, M.B. Edin., M.R.C.S., L.R.C.P., Edinburgh University and St. Bartholomew's Hospital; Louis Carnac Rivett, M.R.C.S., L.R.C.P., Cambridge University and Middlesex Hospital; Lalit Mohan Banerji, M.S. Calcutta, M.R.C.S., L.R.C.P., Calcutta Medical College and St. Bartholomew's Hospital; Arthur Oliver Gray, M.R.C.S., L.R.C.P., Middlesex and St. Bartholomew's Hospitals; James Renfrew White, M.B., Ch.B. New Zealand, M.R.C.S., L.R.C.P., Otago University and Middlesex Hospital; Charles Jennings Marshall, M.D. Lond., M.R.C.S., L.R.C.P., Charing Cross Hospital; and Benjamin Thomas Edye, M.B., Ch.M. Sydney, Sydney University and St. Bartholomew's Hospital.

Diplomas of Member were also conferred upon the following gentlemen who have now complied with the by-laws:—

George Maudsley Jackson, Bristol University; and Charles Wainwright Fort, Manchester University.

In accordance with a report from the Board of Examiners in Dental Surgery it was resolved to issue Licences in Dental Surgery to the following successful candidates:—

Arthur Bramston Austin, Middlesex and Royal Dental Hospitals; Edward Doane Barrows, D.M.D. Harvard, Charing Cross and Royal Dental Hospitals; John Leycester Dudley Buxton, University College and Royal Dental Hospitals; James Arthur Balfour Carson, Middlesex and Royal Dental Hospitals; Leopold Harold Cross, Guy's Hospital; Wilfrid Arthur Culverwell, Bristol University and Royal Dental Hospital; William Robert Davies, Liverpool University; Ernest Archibald Dawson, Guy's Hospital; John William Edgar, Middlesex and National Dental Hospitals; Julius Gillis, Middlesex and Royal Dental Hospitals; Cyril Bowdler Henry, Westminster and Royal Dental Hospitals; Walter Sebastian Herman, B.A. Cantab., Cambridge University and London Hospital; Francis William Holgreaves, Liverpool University; Arthur Edmund Lowein and Launcelot Machin, Guy's Hospital; Albert Victor Milnes, Liverpool University; Leonard Stanley Pilbeam and Petrus Lafras van Schalkwijk, Guy's Hospital; Herbert Vernon, Manchester University; Willem Jacobus Rousseau Viljoen, Guy's Hospital; William Harold Waldman, Middlesex and Royal Dental Hospitals; Frederick Harry Wallace, Guy's Hospital; and Leslie Williams, Birmingham University.

It was resolved to close the Museum until further notice. The Council proceeded to elect the examiners for the ensuing year, and all the present examiners were re-elected.

A Member who had been guilty of advertising was removed from the roll.

DEATH OF DR. GEORGE MOORE.—Dr. George Moore, who died recently in his eighty-fourth year at Torquay, practised formerly in Hartlepool, where he was honorary physician to the Hartlepool Hospital and medical officer of health, and later in Jersey, where he was medical superintendent of the lunatic asylum. A student at the Middlesex Hospital, he took the M.R.C.S. in 1853, proceeding later to the M.D. of St. Andrews.

WOMEN'S HOSPITAL FOR CHILDREN, HARROW-ROAD.—At the annual court of this hospital, which was held at Kensington Town-hall on June 10th, a special appeal was made for funds to endow an adequate in-patient department. Countess Brassey, Lady Hall, Miss E. Robins, Dr. L. Garrett Anderson, and Dr. Flora Murray urged the need of the hospital which is staffed entirely by women and situated in a crowded district. At present the in-patients' department has only seven cots. Treatment is given to children up to the age of 14 years.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Naval Casualties.

Mr. ASQUITH has now given to the House of Commons statistics regarding the casualties amongst officers and men of the Royal Navy, Royal Marines, and Royal Naval Division to May 31st. The figures include the casualties resulting from the loss of the *Bulwark* and other accidental losses. The figures are as follows:—

	Officers.	Men.
Killed	549	7,696
Wounded	181	2,262
Missing	74	2,785
Total...	804	12,743

This makes the total of casualties of all ranks 13,547.

Milk and Dairies Acts Postponement Bill.

A Bill has been introduced in the House of Commons by Mr. HAYES FISHER, on behalf of the Government, to postpone the operation of the Milk and Dairies Act, 1914, and the Milk and Dairies (Scotland) Act, 1914. It was read a first time.

HOUSE OF COMMONS.

THURSDAY, JUNE 10TH.

The War and Epidemics.

Mr. GINNELL asked the Under Secretary for Foreign Affairs whether any international, precautionary or preventive measures were being taken, or instructions issued, against the danger of plague, cholera, or other rapidly spreading disease arising from the war; and, if not, whether the most competent medical advice on the subject would be obtained and made public at the earliest possible date.—Lord ROBERT CECIL replied: Discussions are in progress between French and British experts as to measures to be taken for the prevention of epidemics, and the civil population will receive ample warning and advice should any danger arise.

Medical Consultants to the Navy.

Mr. JOYNSON-HICKS asked the Secretary to the Admiralty when the contracts with the six medical men who were receiving £5000 a year from the Admiralty expired; and whether, having regard to the fact that equally eminent doctors were serving with the army at the front for the ordinary pay of Royal Army Medical Corps officers, he would determine the Admiralty contracts at the earliest possible moment.—Mr. MACNAMARA answered: The question is receiving consideration. I hope a statement may be made shortly.

Treatment of Mental Strain amongst Soldiers.

Mr. RENDALL asked the Under Secretary for War whether cases, which in civilian life were uncertifiable, were amongst soldiers being treated as incipiently insane by being placed not under general physicians but under medical officers whose practice as regarded experience in nervous disturbance had been limited to their practice in asylums for the insane; if so, whether such uncertifiable patients as had been subjected to lunacy control had no right, while still in the army, which was comparable to the right possessed by civilians of appeal to a magistrate, and what steps he proposed to take to give soldiers rights equal to those possessed by all civilians.—Mr. TENNANT said in reply: Uncertifiable cases of nervous disturbance are being treated in the neurological sections of general hospitals and in addition in two institutions which have been taken over from the Board of Control as military hospitals. In the former they are under the care of selected general physicians and neurologists, in the latter under physicians whose previous experience has been largely that obtained in practice in mental institutions. In all such hospitals the patients have exactly the same rights as a soldier undergoing treatment in a purely military hospital, such as the Herbert Hospital at Woolwich which existed as such in times of peace.

Mr. RENDALL: May I take it now that the soldiers are placed under the control of lunacy doctors, and while under such control have not the right of appeal which ordinary civilians have to a magistrate?—Mr. TENNANT: I do not think that is a fair deduction to make from my answer.

Mr. RENDALL: But is not this the arrangement that the doctors under whom soldiers are placed when they break down mentally, although they are lunacy doctors and have at some time been connected with lunacy establishments, have a right to certify, and that the soldiers have been put under these doctors without any power of appeal?—Mr. TENNANT: I think that the statement of my honourable friend goes a little beyond the information I have given him. It is a fact that these medical men have had previous lunacy experience, but they do not necessarily exercise and are not necessarily vested with the same powers as those with which they are vested during peace time over civilians. In these military cases, as I have said, the patient has the same right as a soldier undergoing treatment in a purely military hospital.

Mr. RENDALL: Are greater powers not now exercised without there being any right of appeal?—Mr. TENNANT: No, sir.

Colonel YATE: May we take that as an assurance that soldiers who break down mentally temporarily are not placed in lunatic asylums?—Mr. TENNANT: I have already informed the House that strict orders have been given that cases of this kind are not to be treated as incurable until it is absolutely certain that they are incurable. Every chance is given for the man to be cured.

Colonel YATE: In the meantime they are not placed in an asylum?—Mr. TENNANT: No, that is right.

Mr. RENDALL: Is any mental case certified while under military control?—Mr. TENNANT: Mental cases are not certified until it is necessary to discharge them from the service.

Mr. RENDALL asked the right honourable gentleman to state the names of the clearing houses to which soldiers of the rank and file when disabled by nerve strain were sent on arrival from the front, and the names of the military hospitals specially adapted for the treatment of uncertifiable cases of mental strain: how many of these border-line cases were at present in each one of these institutions, indicating at the same time for what purpose the institution was used previous to being commandeered; and in how many instances these uncertifiable cases had been put in charge of medical officers now gazetted officers of the Royal Army Medical Corps who, up to the time when the institutions were commandeered, belonged to the asylum service and who still retained that status in addition to their military status.—Mr. TENNANT replied: I am obtaining this information.

Mr. AUGUSTINE ROCHE asked the right honourable gentleman whether soldiers invalided from the front, or who had temporarily lost their mental balance, were to be maintained out of Imperial funds.—Mr. TENNANT answered: Soldiers who have temporarily lost their mental balance while with the armies in the field, are at present being retained in the army under treatment at the public expense.

Mr. RENDALL: Is it a fact that many soldiers have been put in lunatic asylums in this country?—Mr. TENNANT: The number is about 17.

Mr. RENDALL: Then there have been some?—Mr. TENNANT: By mistake.

Mr. O'DONNELL: Will the men go on the local rates after they are declared to be incurable?—Mr. TENNANT: I think they go on the local rates, but I am not quite sure.

Naval Surgeons in Charge of Hospital Ships.

Commander BELLAIRS asked the Under Secretary for War whether the naval surgeons in charge of hospital ships having the rank of fleet-surgeon in the Royal Navy had been given the rank of major in the Royal Army Medical Corps; and whether, having regard to the fact that a fleet-surgeon ranked with a lieutenant-colonel, the latter rank could be accorded to them, no question of pay being involved, instead of degrading them one step in rank.—Mr. TENNANT wrote in reply: These officers voluntarily offered their services and accepted the rank of major. They have no experience for army requirements beyond that which is to be obtained by medical charge of hospital ships, and are not, therefore, eligible for service in the rank of lieutenant-colonel.

Housing Accommodation in Wrexham.

Mr. WARDLE asked the President of the Local Government Board what action the Board had taken, or intended to take, in connexion with the neglect of the Wrexham town council to carry out the recommendations of the Board, based upon an inquiry held in 1913, to build at least 30 houses suitable for the working classes; whether he was aware that in the report of the Wrexham medical officer of health for 1914 it was stated that at that time there was not a single house vacant at a week's rental of 6s. or less; and whether, in view of the scarcity of working-class accommodation in Wrexham, pressure would be brought to bear on the local authority to take steps to meet the admitted need.—Mr. W. LONG answered: The Local Government Board has been in communication with the town council of Wrexham in regard to the provision of houses for the working classes, and the council has made application for sanction to a loan for the erection of 30 houses. A local inquiry in regard to the matter is to be held on June 17th.

MONDAY, JUNE 14TH.

Accumulations of Refuse.

Sir J. D. REES asked the President of the Local Government Board whether he had issued his proposed circular regarding the accumulation of refuse in the neighbourhood

of dwellings, and whether it was to be addressed to rural district, as well as to county borough and urban district councils.—Mr. LONG replied: The circular referred to was issued last month[1] to urban authorities. I am considering the issue of another circular to all sanitary authorities urging special precautions for the prevention of disease during the summer months.

Notification of Births Act.

Mr. LOUGH asked the President of the Local Government Board whether his attention had been drawn to the increase of infant mortality both in London and throughout the country; and whether, having regard to the seriousness and urgency of this question in its relation to the problems created by the war, he could see his way to introduce and pass as an uncontentious measure a Bill which, by the more stringent enforcement of the prompt registration of births, the greater safeguarding of the health of mothers, the establishment of public crèches, or other methods, might tend to abate this evil.—Mr. LONG answered: I am fully aware of the importance of this matter, and as I intimated to a deputation on Thursday last, I am anxious to introduce without delay a measure making the Notification of Births Act of general application and conferring certain powers on local authorities for safeguarding the health of infants and expectant mothers. I shall be glad if honourable Members will coöperate with me in securing the unopposed passage of the Bill.

Treatment of Nerve Strain amongst Soldiers.

Mr. RENDALL asked the Under Secretary for War to state the names of the clearing houses to which soldiers of the rank and file when disabled by nerve strain were sent on arrival from the front, and the names of the military hospitals specially adapted for the treatment of uncertifiable cases of mental strain; how many of these border-line cases were at present in each one of these institutions, indicating at the same time for what purpose the institution was used previous to being commandeered; and in how many instances these uncertifiable cases had been put in charge of medical officers now gazetted officers of the Royal Army Medical Corps who, up to the time when the institutions were commandeered, belonged to the asylum service and still retained that status in addition to their military status.—Mr. TENNANT said in reply: The clearing houses are the Royal Victoria Hospital, Netley, and the 4th London (T.F.) General Hospital, Denmark Hill. These cases are sent to various military hospitals throughout the country and special neurological sections have been established in connexion with the Territorial Force general hospitals so as to bring the patients under the observation of the eminent neurologists at these centres. It is not possible with any degree of accuracy to give the numbers of what my honourable friend calls "border-line cases." The Red Cross Military Hospital, Maghull, and the Springfield War Hospital were taken over as military hospitals through the Board of Control and the superintendents of these institutions were appointed to the charge of the military hospitals when they were taken over. For the time they are purely military medical officers.

Mr. RENDALL asked the Under Secretary of State for War whether the new military hospital shortly to be opened at Napsbury had been known for years as a county lunatic asylum; whether its lunacy staff of medical officers were to be retained to take charge of nerve-shattered soldiers without any appeal or judicial investigation; and whether he would consider the possibility, as an alternative, of treating transiently acute cases of nerve-shock in the same way as delirious cases were treated on medical lines in ordinary hospitals, and so save both the injured soldiers and their families from the opprobrium associated with having been treated in a lunatic asylum.—Mr. TENNANT replied: The answer to the first two parts of the question is in the affirmative; but I am unaware what appeal or judicial investigation is contemplated by my honourable friend. The cases of nerve-shock to which the word "transient" may be applicable will be sent to military hospitals. I can assure my honourable friend that neither the desire nor the intention is lacking in my military medical advisers to save the soldiers and their families from the opprobrium associated with having been treated in a lunatic asylum.

Battalion Medical Officers.

Sir PHILIP MAGNUS asked the Under Secretary for War whether there was any shortage of battalion medical officers in the army; if so, what steps were being taken to remedy such shortage; and whether the Army Medical Department was conferring with the official representatives of the medical profession in this country with a view to the better organisation of the medical profession for war purposes.—Mr. TENNANT answered: There is not at present any shortage of battalion medical officers, but more are still required in order that the needs of the new Army and the Territorial Force may be fully supplied. Considerable numbers are being engaged every week, and the Director-General of the Army Medical Service is receiving every support from the official representatives of the civil medical profession with whom, not only on this but also on other matters affecting the health and well-being of the troops, he is in constant and cordial relations.

The King George Hospital.

Sir PHILIP MAGNUS asked the Under Secretary for War whether he could state how many medical officers were at present employed at the King George Hospital, Stamford-street; how many of these were of military age; what was the proportion of such officers to the number of patients, and how that proportion compared with the proportion of medical officers to patients in the general medical hospitals; whether men above the age of 40 were eligible for appointments at the King George Hospital; and whether the staff of younger men might be reduced if they were assisted by medical men over 40 years of age working part time.—Mr. TENNANT said in reply: The medical officers of this hospital were appointed by the Red Cross Society and I understand that there are 25 resident and 24 are of military age, though I cannot say how many of these are, in fact, eligible for any service. There is one medical officer to 66 beds, which is a somewhat more favourable proportion than in other hospitals. An arrangement of part-time service would not be convenient, I believe, but I sympathise with the object the honourable gentleman has in view, and inquiries will be made to see whether any of the junior medical officers who are eligible could be released for general medical service with the army.

Precautions against Asphyxiating Gases.

Sir ARTHUR MARKHAM asked the Under Secretary for War: 1. Whether, seeing that Dr. Haldane was requested by the Government to report on the poisonous gases used by the Germans, he was aware that Dr. Haldane at once instructed Mr. S. F. Winmill, B.A., B.Sc., chief chemist of the Doncaster Coalowners Scientific Research Committee, to make tests of the best forms of respirators for the use of the troops, and that Dr. Haldane stated that the form of respirator proposed to be issued by the War Office was of no value whatever; whether, notwithstanding this, Lord Kitchener made an appeal to the women of the country to make these respirators; whether many men at Hill 60 lost their lives at Hill 60 when using this respirator; and whether the Director-General of Medical Services was consulted and approved this pattern of respirator. 2. Whether, seeing that Mr. Winmill had presented a report to the Doncaster Coalowners Scientific Research Committee that men could, if they took certain precautions, evade poison gases without even using respirators, he would say whether Dr. Haldane and Mr. Winmill had been asked by the War Office to make any report on the question; whether, if no such report had been asked for, he would at once ask Dr. Haldane to make a brief report stating the precautions which would prevent loss of life even though no respirator was used or available; and would he see that this report was at once sent to General Sir John French. 3. Whether he was aware that Dr. Haldane was recognised in all countries as one of the greatest living physiologists, his books being the recognised standard authority; whether he was aware that Dr. Haldane had for years past given his services to the Home Office to assist in obtaining a reliable breathing apparatus for use in mines; and whether he was aware that Dr. Haldane has made innumerable tests of all types of breathing apparatus.—Mr. TENNANT answered: The eminence of Dr. Haldane as an authority is of course well known, and he has advised the War Office on the matter in question and continues to advise. The type of respirator used at the outset was that approved by the Admiralty, and it was adopted with the approval of the Director-General of the Army Medical Service until a more suitable type could be devised for the special circumstances. I have on previous occasions explained the circumstances in which an appeal was made to the public. I have no knowledge of the report made by Mr. Winmill, but I may inform my honourable friend that Dr. Haldane has already indicated certain protective measures that may be taken by troops, if they happen to be without one of the authorised respirators, and the necessary instructions have been given by the military authorities in France. The means of protection now in use are reported on most favourably by the authorities in France. Recourse has been had in studying these problems to all the best brains in the country.

TUESDAY, JUNE 15TH.

Notification of Births Act.

Mr. SNOWDEN asked the President of the Local Government Board whether he was aware that the latest return of the Registrar of Births showed that the birth-rate in London was now from 400 to 500 per week below the average of the last five years, that children had been dying in London during the last 13 weeks at the rate of 200 per week above

[1] THE LANCET, June 5th, p. 1190.

the rate for the corresponding weeks of last year, that the increased mortality among children was general throughout the country, that this increase was attributed to causes connected with the war, that the problem was now so serious that if the present rate be continued for 42 weeks all the infants would have succumbed; in view of the state of things would he at once meet the defects in the present law by a small Bill to amend the Notification of Births Act, empowering local authorities to make such arrangements as might be sanctioned by the Local Government Board for securing the health of mothers and infants; and would he at the same time respond to the many appeals which have been made to his department to make the Notification of Births Act universal, especially in view of the fact that 1 child in 10 born died within 48 hours of birth.

Sir GEORGE TOULMIN asked the right honourable gentleman whether he was prepared to introduce legislation for the amendment and strengthening of the Notification of Births Act.—Mr. LONG (replying to both honourable Members) said: The births registered in London during the second quarter of this year averaged 79 per week fewer than the corresponding weekly number in the past five years, and during the 13 weeks ending June 5th there has been a weekly excess in the deaths of children under 5 years of age averaging 169. This excess has been mainly due to an exceptional prevalence of measles and whooping-cough with their usual sequelæ. The suggestion in the question that, if the present rates be continued for 42 weeks, all the infants will have succumbed, is, I am happy to say, devoid of foundation, as is also the statement that 1 child in 10 dies within 48 hours of birth. As regards the legislation suggested in the two questions, I would refer to the answer which I gave yesterday, in which I stated that I was anxious to introduce without delay a measure making the Notification of Births Act of general application, and conferring certain powers on local authorities for safeguarding the health of infants and expectant mothers.

WEDNESDAY, JUNE 16TH.

Royal Army Medical Corps.

Colonel YATE asked the Under Secretary for War whether, considering that between July 31st, 1914, and March 31st, 1915, only 14 captains in the Royal Army Medical Corps were promoted majors, and during the same period some 97 majors were promoted lieutenant-colonels, he would now take steps to have a corresponding number of captains promoted to the rank of major.—Mr. TENNANT replied: The majors were promoted to the rank of lieutenant-colonel to fill appointments for officers of that rank. The promotion of captains will be considered as and when majors are required. There is no fixed establishment of the latter rank, and under ordinary circumstances promotion to it goes by time qualification.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

AHEARN, M. J., has been appointed Medical Officer of the Lowpark Dispensary District by the Swinford Board of Guardians.

DAVIES, HOWARD, M.R.C.S., L.S.A., has been appointed Temporary Medical Officer of Health and Superintendent of the Isolation Hospital, Pontypridd.

IBOTSON, EDWARD C. B., M.D., B.S. Lond., L.S.A., has been appointed Certifying Surgeon under the Factory Act for the Civil Parish of Talyllyn and part of Machynlleth Rural District.

MCMILLAN, A. LEWIS, M.D., C.M. Glasg., has been appointed Consultant Eye Specialist to the Glasgow Corporation Hospitals.

OGILVIE, W. M., M.B., C.M. Aberd., has been appointed Medical Superintendent of the Ipswich Borough Mental Hospital.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

ABERDEEN, UNIVERSITY OF.—Examiners.

BATH, WINSLEY SANATORIUM FOR CONSUMPTION.—Assistant Resident Medical Officer. Salary £250 per annum, with board, residence, and laundry.

BEXLEY, KENT, LONDON COUNTY ASYLUM.—Locum Tenens Medical Officer. Salary 6 guineas a week, with quarters, board, and washing.

BIRKENHEAD BOROUGH HOSPITAL.—House Surgeon. Salary £300 per annum, with board and laundry.

BIRMINGHAM GENERAL DISPENSARY.—Resident Medical Officer, unmarried. Salary £250 per annum, with apartments, attendance, &c.

BIRMINGHAM AND MIDLAND EYE HOSPITAL.—Junior House Surgeon. Salary £100 per annum, with residence, board, &c.

BLACKPOOL COUNTY BOROUGH.—Clinical Tuberculosis Officer.

BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.—House Surgeon. Salary £100 per annum, with board-residence.

BOLTON INFIRMARY AND DISPENSARY.—Senior House Surgeon. Salary £230 per annum, with apartments, board, and attendance.

BRISTOL ROYAL INFIRMARY.—Assistant to Ear, Throat, and Nose Department.

BROOK WAR HOSPITAL, Shooters Hill, Woolwich.—Resident Assistant Surgeons and Physicians. Salary £1 a day, with residence, board, and lodging.

BURY INFIRMARY.—Senior and Junior House Surgeons. Salary £175 and £150 per annum respectively, with board, residence, and washing.

CARDIFF, WELSH METROPOLITAN WAR HOSPITAL, Whitchurch, near Cardiff.—Pathologist and Bacteriologist. Salary £1 per day, with board, apartments, and washing.

CARLISLE NON-PROVIDENT DISPENSARY.—Resident Medical Officer. Salary £200 per annum, with apartments (not board).

CHELSEA INFIRMARY, Cale-street, S.W.—Assistant Medical Officer. Salary £300 per annum, with rations, apartments, and washing.

CIRENCESTER, GLOS., 1ST SOUTH MIDLAND MOUNTED BRIGADE FIELD AMBULANCE.—Two Medical Officers to complete 2nd Line (Territorial).

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark, S.E.—Clinical Assistants in Out-patient Departments.

FOLKESTONE, ROYAL VICTORIA HOSPITAL.—House Surgeon. Salary as agreed, with board, residence, and laundry.

GENERAL LYING-IN HOSPITAL, York-road, S.E.—Resident Medical Officer for three months.

GUILDFORD, ROYAL SURREY COUNTY HOSPITAL.—House Surgeon. Salary £150 per annum, with board, residence, and laundry.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—House Physician for six months. Salary 30 guineas. Also Assistant Resident Medical Officer. Salary £100 per annum, with board and residence.

INVERNESS, NORTHERN INFIRMARY.—House Surgeon. Salary £150 per annum, with board, &c.

LEAMINGTON SPA, WARNEFORD, LEAMINGTON, AND SOUTH WARWICKSHIRE GENERAL HOSPITAL.—Second Resident Medical Officer. Salary £200 per annum, with board, residence, and laundry.

LEEDS PUBLIC DISPENSARY.—Female Resident Medical Officer Salary £130 per annum, with board, residence, and laundry.

MACCLESFIELD GENERAL HOSPITAL.—House Surgeon. Salary £150 per annum, with board and residence.

MANCHESTER COUNTY ASYLUM, Prestwich.—Locum Tenens. Salary 6 guineas per week.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Parkplace, Cheetham Hill-road.—House Surgeon. Salary £120 per annum, with apartments and board.

MARGATE, ROYAL SEA-BATHING HOSPITAL FOR SURGICAL TUBERCULOSIS.—Resident Surgeon. Salary at rate of £150 per annum, with board, residence, and laundry.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART, Westmoreland-street, W.—Resident Medical Officer for six months. Salary at rate of £80 per annum, with board, residence, and washing.

NEW ZEALAND WAR CONTINGENT ASSOCIATION, 25, Victoria-street, London, S.W.—Two Visiting Surgeons.

NORWICH INCORPORATION.—District Medical Officer. Salary at rate of £100 per annum.

NORWICH, 3RD LINE DEPÔT, 2ND EAST ANGLIAN FIELD AMBULANCE.—Medical Officers. Pay and allowance as in Regular Army.

NOTTINGHAM GENERAL HOSPITAL.—Senior House Physician and Assistant House Physician. Salary at rate of £300 and £250 per annum respectively, with board, residence, and laundry.

OLDHAM COUNTY BOROUGH.—Assistant Schools Medical Officer. Salary £325 per annum.

PLYMOUTH, SOUTH DEVON AND EAST CORNWALL HOSPITAL.—House Surgeon and House Physician. Salary as arranged, with board, residence, and washing.

POPLAR AND STEPNEY SICK ASYLUM, Devon-road, Bow, E.—Temporary Assistant Medical Officer. Salary 7 guineas per week, with board and residence.

PORTSMOUTH WORKHOUSE INFIRMARY, WORKHOUSE, AND CHILDREN'S HOME.—Female Second Assistant Medical Officer. Salary £150 per annum, with apartments, rations, &c.

QUEEN CHARLOTTE'S LYING-IN HOSPITAL, Marylebone-road, N.W.—District Resident Medical Officer for four months. Salary at rate of £60 per annum, with board, residence, and washing.

RHONDDA URBAN DISTRICT COUNCIL.—Temporary Assistant Medical Officer of Health and School Medical Officer. Salary £350 per annum.

ROYAL EYE HOSPITAL, St. George's-circus, Southwark, S.E.—House Surgeon. Salary £75 per annum, with board, apartments, and washing.

ST. MARY'S HOSPITAL FOR WOMEN AND CHILDREN, Plaistow, E.—Assistant Resident Medical Officer. Salary at rate of £90 per annum, with board, residence, and laundry.

SALFORD COUNTY BOROUGH.—Medical Officer for Maternity and Child Welfare work. Salary £300 per annum.

SALISBURY GENERAL INFIRMARY.—House Surgeon and Assistant House Surgeon, unmarried. Salary £150 and £100 per annum respectively, with apartments, board, lodging, and washing.

SHEFFIELD ROYAL INFIRMARY.—House Surgeon and Assistant House Physician. Salary £100 per annum, with board and residence.

SHEFFIELD, WHARNCLIFFE WAR HOSPITAL, Middlewood-road.—Resident Medical Officers.

SOUTH LONDON HOSPITAL FOR WOMEN, 88-90, Newington-causeway, S.E.—Female Anæsthetist.

SOUTHAMPTON, PARISH INFIRMARY, Shirley Warren.—Resident Assistant Medical Officer. Salary £250 per annum, with apartments, rations, washing, and attendance.

STOCKPORT INFIRMARY.—Senior House Surgeon. Salary £200 per annum, with board, washing, and residence.

SUNDERLAND ROYAL INFIRMARY.—Resident Medical Officer. Salary £150 per annum, with board, residence, and laundry.

SWANSEA GENERAL AND EYE HOSPITAL.—House Physician. Salary £200 per annum, with board, apartments, and washing.

TUNBRIDGE WELLS GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £250 per annum, with board, residence, &c.

VENTNOR, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Isle of Wight.—Assistant Resident Medical Officer.

WALSALL AND DISTRICT HOSPITAL.—Assistant House Surgeon and Anæsthetist. Salary £150 per annum, with board, residence, and laundry.

WARRINGTON INFIRMARY AND DISPENSARY.—Senior and Junior House Surgeons. Salary £180 and £120 per annum respectively, with board, apartments, and laundry.

WEST BROMWICH AND DISTRICT HOSPITAL.—House Surgeon and Assistant House Surgeon, unmarried. Salary £150 and £120 per annum respectively, with residence, board, and laundry.

WEST HAM AND EASTERN GENERAL HOSPITAL.—Resident Medical Officer. Salary £160 per annum. Also House Physicians and House Surgeons. Salary £120 and £100 per annum respectively, with board, residence, and washing.

WEST HAM UNION.—Third Assistant Medical Officer and Fourth Female Assistant Resident Medical Officer at Infirmary, Whipps-Cross-road, Leytonstone, N.E. Salary £200 and £180 per annum respectively. Also Female Resident Assistant Medical Officer at Workhouse, Union-road, Leytonstone, N.E. Salary £180 per annum. Each with usual residential allowances.

WIGAN, ROYAL ALBERT EDWARD INFIRMARY AND DISPENSARY.—Junior House Surgeon. Salary £150 per annum, with board, apartments, and washing.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Buckhaven, in the county of Fife; at Kirkham, in the county of Lancaster; at Market Bosworth, in the county of Leicester; and at Rothes, in the county of Elgin.

Births, Marriages, and Deaths.

BIRTHS.

BOURNE.—On June 13th, at Nottingham-place, W., the wife of Lieutenant A. W. Bourne, F.R.C.S., of a daughter.

LINTON.—On June 14th, at Tunbridge Wells, to the wife of Captain F. C. Linton, R.A.M.C. (T.), a son and a daughter.

MILLIGAN.—On June 4th, at Hessle, Yorks, to Dr. and Mrs. H. P. Milligan, a son.

ROPER.—On June 8th, at Biscovey House, Par, Cornwall, to Dr. and Mrs. Charles Roper, a son.

WEBB.—On June 9th, at "Moreton," Park Drive, Hampstead, to Lieutenant G. Harvey D. Webb, R.A.M.C. (T.F.), and Mrs. Harvey Webb, a daughter.

MARRIAGES.

EVANS—RUTHERFORD.—On June 10th, at Dunkeld Cathedral, Albert Edward Evans, M.B., to Jessie Dorothy, second daughter of the Rev. T. R. Rutherford, M.A., Minister of Dunkeld.

PARROTT—MEADE.—On June 15th, at St. Michael's Church, Greinton, Harold Winnock Parrott, M.B, B.S., son of A. G. Parrott, M.R.C.S., L.R.C.P., of Shanghai, to Ella Mary, daughter of Mr. and Mrs. Frank Meade, of Greinton, Somerset.

ROOK—CALWAY.—On June 12th, at St. George's Church, Wilton, Taunton, Henry Colwell Rook, Lieutenant, R.A.M.C. (S.R.), to Alice Marguerite, elder daughter of Mr. and Mrs. F. Calway, of Henley Lodge, Taunton.

SCHOFIELD—OVER.—On June 11th, at Crowthorne, Berks, Harry Schofield, R.A.M.C., to Nellie, fourth daughter of Mr. and Mrs. H. Over, Wellesley House, Crowthorne, Berks.

DEATHS.

HOLLIS.—On June 4th, at Tower House, Freshwater, Isle of Wight, Alfred Hollis, M.D., aged 69 years.

MOORE.—On June 10th, at Torquay, George Moore, M.D., J.P., in his 84th year.

TREWMAN.—On June 13th, suddenly, George Turner Trewman, Lieutenant-Colonel, R.A.M.C., aged 59 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

AMERICAN MEDICO-PSYCHOLOGICAL ASSOCIATION, Baltimore, U.S.A.
Proceedings of 70th Annual Meeting, May, 1914. Vol. XXI.

ARNOLD, EDWARD, London.
Urgent Symptoms in Medical Practice. By Robert Saundby, M.D. Edin., Lt.-Col. R.A.M.C., T. Price 7s. 6d. net.

BAILLIÈRE, TINDALL, AND COX, London.
The Selection of the Recruit. By Captain S. J. Beggs, M.D., R.A.M.C. (Reserve of Officers). Price 2s. 6d. net.

BALE, JOHN, SONS, AND DANIELSSON, London.
A Practical Manual of Tuberculosis for Nurses. By L. T. Burra, M.D. Oxon. Price 2s. net.

CHAPMAN AND HALL, LIMITED, London.
Drink and the War: From the Patriotic Point of View. By Marr Murray. Price 1s. net.

CHURCHILL, J. AND A., London.
Sanitation in War. By Major P. S. Lelean, F.R.C.S., D.P.H., R.A.M.C. With an Introduction by Surgeon-General Sir Alfred Keogh, K.C.B., F.R.C.P. Price 5s. net.

HEINEMANN, WILLIAM, London.
The Book of the Fly: A Nature Study of the House-fly and its Kin. By G. Hurlstone Hardy. With an Introduction by Halford Ross. Price 2s. 6d. net.

Notes, Short Comments, and Answers to Correspondents.

MONSTERS AND SCHRECKLICHKEIT.

So the "wild girl of Naini Tal," who received notice in these pages some months ago, is now pronounced on good authority to be an ordinary imbecile. All men are inclined to be mythopoetic in such matters, for there lingers in the human breast a tendency to discover prodigies, inherited from savage ancestors. Monsters of all kinds, including "wild" children, were indeed better known to a more primitive generation than to the present; and at one time the production of monsters was an industry having for its double object pecuniary gain and the satisfaction of superstition. An Italian work was published as lately as the closing years of the nineteenth century in order to show the manner in which monstrosities can be produced and grown. Once alive and kicking, your monstrosity can be exhibited to the public for cash. An old authority on prodigious births is Lycosthenes. In his "Prodigiorum et Ostentorum Chronicon," published at Basle in 1557, are some remarkable recitals. He describes, for instance, a cadet of a noble Polish house who was "terrible to behold," for he was born with flaming and shining eyes. His mouth and nostrils were similar to those of an ox. He had also long horns and a back hairy as a dog's, and cat's eyes, which were situated far below his chest—we are not told exactly where. These eyes looked "hideously and frightfully." Furthermore, this Pole "had the heads of dogs upon both elbows and at the whirlbones of each knee." His feet resembled those of the swan, and he possessed "a tail which was crooked backwards about half an ell long," so that sitting down was impossible. Born at Cracow, this noble Polish cadet remained perfectly silent until within an hour of his death, when he uttered the one word "Watch," which was held to refer to one or other of the many revolutions of the time (1543).

Even the most rational of medical men concerned themselves with descriptions of abnormalities. Ambroise Paré describes a small monster, of the Molline family at Antwerp, "wholly like a dog, save that it had a shorter neck and the head of a bird." Also a young Savoyard, who had a long piece of flesh, like a French hood, hanging down from the nape of his neck almost to his heels, while two other pieces, like the collar of a shirt, were wrapped round his neck. He had also white boots of flesh on his legs, doubled down like the boots of brigands in old-world melodrama. The Duke of Savoy caused him to be brought to court, "which performed, one would hardly imagine the various censures the courtiers gave of the creature."

Now Paré, a Frenchman, and Lycosthenes (Conrad Wolffhart), who was a professor of Basle and a native of Alsace, were both inheritors of noble traditions of culture. If in matters touching monstrosity these enlightened men were credulous, how much more so must have been the inhabitants of remote and half-civilised regions. Northern Germany, for instance, is known to have long possessed an intensive tradition of monstrosity and of the terrible, dating from the mythologic epoch. A more grandiosely dreadful, a more Apocalyptic picture than that of the entire annihilation of the world by the Powers of Darkness and Fire, which is the climax of the "Prose Edda," has perhaps never been painted. But the monsters of Germanic mythology and of mediæval medical men are only terrible in vague outline. It was left to a mild Saxon lunacy expert of modern times, Dr. Heinrich Hoffmann, to introduce into the petty mythology of the nursery a pair of degenerates in the persons of the ever-memorable "Struwwelpeter," the self-neglecting little monster of weak intellect, and *der böse Friderich, der wahrer Wüterich*, who dismembered flies and killed birds and cats. The ten episodes in the classic "Struwwelpeter," a chap-book for the nursery, which was published in 1845 and had reached its fortieth thousand before 1860, are mostly of the bloodthirsty kind.

SANITARY CONVENIENCES IN SHOPS.

THE Committee appointed by the Government to consider the question of further enlistment in the distributing trades have represented to the Local Government Board that a difficulty arises in the case of the smaller shops in releasing men of military age for service in the army and replacing them by women by reason of the provisions of the Public Health Acts requiring separate sanitary accommodation for each sex. The Government at the moment are appealing to shopkeepers to set free all their male staff who are medically fit for service, and of age for enlistment. It is found, however, in many cases that separate sanitary accommodation for the two sexes is not available

on the premises and such accommodation is required by the Acts. It will be hard on the employer if, having already lost many male assistants, he is called upon to make structural alterations in his premises to meet conditions which are only intended to be temporary, while the need will especially arise in small shops where female labour has not yet been employed. The requirements of the Acts cannot, of course, be dispensed with, and the Board suggest that the difficulty may be met by some temporary arrangement, such as the use, free of charge, of a convenience in a neighbouring house, or of a public convenience near by. We believe that in the case of factories and workshops, where the same problem has arisen, arrangements of this kind have been adopted, with the consent or concurrence of the Inspector of Factories, and have proved satisfactory; and no other economical course is possible. We trust that the sanitary officers, to whom circulars have been issued, will ascertain whether temporary arrangements of the kind indicated can be made, and will generally facilitate the action of any shopkeeper who is willing to allow his male assistants to join the army.

FATAL EXPECTANCY.

To the Editor of THE LANCET.

SIR,—Recently in a conversation with a medical officer in charge of a department especially devoted to tuberculosis he expressed the opinion that he would exclude a diagnosis of pulmonary tuberculosis until a third or even a fourth examination of the sputum revealed each time the presence of T.B., the local symptoms being indefinite and suspicious only. Not, be it observed, that he would exclude the diagnosis only after a third or fourth examination proved negative. Such a view if generally held must surely be fatal to the campaign against consumption. It would be interesting to know if this view is prevalent. Sceptics are not the class from whom progress may be expected in any sphere of life, whereas enthusiasts, though they are apt to fly too high, do help the world to progress. To wait until the symptoms are definite and unmistakable and the complaint has got a firm hold is not good either for the individual or for preventing it spreading.

I am, Sir, yours faithfully,

City-road, E.C., June 10th, 1915. J. J. UDALE.

LIME-JUICE.

WITH the advent of the hot weather there is likely to be a demand for cooling drinks, especially for lemonade and lime-juice. In the South African War lime-juice was provided for the troops in jars and barrels, and quantities were held in reserve at various places, and there is little doubt that far greater amounts of this beverage will be consumed this summer. For the wounded officers and for certain wounded men there is a supply of iced champagne, but an army cannot be kept refreshed on such a costly beverage, even if available. In 1903 Sir Wodehouse Richardson said: "Powdered lime-juice can now be obtained, 2 or 3 ounces of which make several gallons of a very palatable beverage. It is thus far more portable than lime-juice in barrels or bottles. The medical authorities would have to be consulted before this powder could be adopted." We do not know to what medical authorities this refers, unless to the army medical authorities, but the merits of a powder as against a liquid call for careful consideration on the grounds of preservation of the essential properties, keeping qualities in hot weather, freedom from admixture, intentional or accidental, flavour, and so forth.

SCOPOLI.

To the Editor of THE LANCET.

SIR,—With your permission I would supplement your note on Scopolamine on p. 1272 of to-day's issue of THE LANCET by some references to Signor Giovanni Antonio Scopoli, the great naturalist of Cavalese, in the Tyrol, where he was born on June 15th, 1725, 190 years ago. From M. L. Hahn we learn that Scopoli studied the humanities at Trieste and medicine at Innsbruck, where he took his doctorate in 1745. At Innsbruck he developed a strong love for natural history, botany first attracting his attention. As there was no teacher of natural history in the University he was practically self-taught, and formed the basis of a natural classification which much more nearly approaches to Ray's natural one than that of Linnæus. He collected a large number of the plants indigenous to the mountains of Tyrol, and formed the design of publishing a flora of his native country. But the project was defeated by his being called to Styria and afterwards to Vienna, hence he came to Idria, where he obtained a medical appointment. But his love of natural science drew him away from the routine work of medicine, and with renewed energy he applied himself to the study of botany. His mental activity, however, was so great that he embraced in his curriculum entomology, mineralogy, and chemistry. Whilst in practice in Idria he found time to write his famous "Flora Carniolica," which was published in 8vo at Vienna, 1760, in which book it may be noted that he followed the Linnean classification. His entomology, "Entomologia Carniolica," published in Vienna, 1765, illustrated by some 40 odd engravings, was not a financial success, though it greatly increased his reputation. His interest in the subject of minerals was excited by seeing the extensive use made of mercury in the Styrian mines, and in 1771 his "Mineralogische Vorlesungen" was published at Vienna. Of medical writers he was one of the first to call attention to diseases incidental to industrial occupations. The removal of Jacquin to Vienna from Chemnitz left a vacancy for a mineralogist for the great Hungarian mines which Scopoli was called to fill, and in the year of his appointment, 1777, he published his "Fundamenta Chemiæ" at Prague. Soon afterwards he was appointed professor of natural history at Padua, which chair he occupied until his death in 1788.

I am, Sir, yours faithfully,

Dublin, June 12th, 1915. GEORGE FOY.

THE LATE LORD ROBERTS ON THE TREATING OF SOLDIERS.

A FEW days ago a soldier arrested for drunkenness in London gave as his explanation that he had returned from the front wounded and that a lady had treated him to a bottle of whisky. Now, this is not the way to welcome returned soldiers, and we would redirect attention to the letter from the late Lord Roberts published in THE LANCET of Nov. 10th, 1900, in which he said: "Will you kindly allow me, through the medium of your paper, to make an appeal to my countrymen and women upon a subject I have much at heart and which has been occupying my thoughts for some time past. All classes in the United Kingdom have shown such a keen interest in the army serving in South Africa, and have been so munificent in their efforts to supply every need of that army, that I feel sure they must be eagerly looking forward to its return and to giving our brave soldiers and sailors the hearty welcome they so well deserve when they get back to their native land. It is about the character of this welcome and the effect it may have on the reputations of the troops whom I have been so proud to command that I am anxious and that I venture to express an opinion. My sincere hope is that the welcome may not take the form of 'treating' the men to stimulants in public-houses or in the streets, and thus lead them into excesses which must tend to degrade those whom the nation delights to honour, and to lower the 'soldier of the Queen' in the eyes of the world—that world which has watched with undisguised admiration the grand work they have performed for their sovereign and their country. From the very kindness of their hearts, their innate politeness, and their gratitude for the welcome accorded them, it will be difficult for the men to refuse what is offered to them by their too generous friends. I therefore beg earnestly that the British public will refrain from tempting my gallant comrades, but will rather aid them to uphold the splendid reputation they have won for the Imperial army."

Lord Roberts's warning seems to be urgently needed at the present juncture.

THE NATIONAL CLEAN MILK SOCIETY.

THE aims of this society are to raise the hygienic standard of milk and milk products, and to educate the public in regard to the importance of securing a clean and wholesome milk-supply. Plans are now being decided upon by the council for a clean milk and infants' welfare station to be established in one of the poorest quarters of London, where clean milk can be sold to the poor, and where mothers can be educated in the care of their babies on lines similar to those that have proved useful in New York. The movement will have medical approval, and we should be glad to see it develop, rapidly and successfully, all over the country. Money, of course, is needed to carry on this important hygienic work, and the council, which is a strong one, containing several well-known leaders of our profession, appeal to the public to support the movement by becoming members of the society. Communications should be addressed to the secretary, 2, Soho-square, London, W.

THE OPEN-AIR TREATMENT OF THE WOUNDED.

UNDER the title of "The Open-air Treatment of the Wounded," Dr. A. E. Shipley, F.R.S., Master of Christ's College, Cambridge, has written a description of the First Eastern General Hospital, Cambridge, for the *Country Life* Library. The book is an eloquent plea for fresh air in the treatment of disease, and the remarkable statement is made that this form of treatment reduces the expense per bed from £200 to £16. In a footnote Lord Knutsford says that Dr. Shipley's estimate of £200 per bed for an ordinary hospital is too low, £300 to £400 being nearer the truth in a London hospital. Professor W. J. R. Simpson, C.M.G., in a chapter on open-air treatment, gives the number of patients who have passed through the Cambridge Hospital as 6600, with a death-rate of only 4·6 per

1000. Of 60 cases of pneumonia that have been treated in the hospital, 95 per cent. have recovered. The book, which is well illustrated, is published by the proprietors of *Country Life*, 20, Tavistock-street, Covent Garden, W.C., price 1*s.* net.

T. L. Cashel.—The various eponymous terms can all be found by reference to one of the medical dictionaries, of which there are several. The best of these, we regret to state, are of American origin.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS OF LONDON, Pall Mall East.

TUESDAY AND THURSDAY.—5 P.M., Croonian Lectures:—Surgeon-General Sir David Bruce, C.B: Trypanosomes causing Disease in Man and Domestic Animals in Central Africa. (Lectures II. and III.)

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Dr. Pritchard: Bacterial Therapy Department. Mr. B. Harman and Mr. Gibb: Diseases of the Eye.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women. Mr. Gibb: Diseases of the Eye.

THURSDAY.—9 A.M., Dr. Bernstein: Bacterial Therapy Department. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. D. Armour: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. E. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham); Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. H. D. Gillies). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. Gillies). Children Out-patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out-patients. 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie). 4.30 P.M., Clinical Demonstration:—Dr. A. E. Giles: Illustrative Gynæcological Operations.

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.

THURSDAY.—5.15 P.M. Clinical Lecture.

For further particulars of the above Lectures, &c., see Advertisement Pages.

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METEOROLOGICAL READINGS.

(Taken daily at 9.30 a.m. by Steward's Instruments.)

THE LANCET Office, June 16th, 1915.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
June 10	29·900	E.	0·01	109	70	61	59	62	Raining
,, 11	30·100	N.E.	...	106	72	57	56	61	Cloudy
,, 12	30·256	S.E.	...	105	69	54	54	59	Fine
,, 13	30·220	N.E.	...	107	75	53	52	56	Cloudy
,, 14	30·230	N.E.	...	116	68	51	49	53	Cloudy
,, 15	30·220	N.E.	...	111	69	51	50	55	Cloudy
,, 16	30·184	N.E.	...	111	73	49	53	56	Fine

The following magazines, journals, &c., have been received:—Canadian Journal of Medicine and Surgery, Annali di Medicina Navale e Coloniale, Bulletin of the Johns Hopkins Hospital, Revista de la Asociación Médica Argentina, Surgery, Gynæcology, and Obstetrics, St. Thomas's Hospital Gazette, Medical Journal of Australia, Revista Médica del Uruguay, Modern Hospital, American Journal of the Medical Sciences, Proceedings of the Royal Society of Medicine, Maryland Medical Journal, Archives of Radiology and Electrotherapy, Tropical Medicine and Hygiene, &c.

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